Shri Chaitenyeshwar Shikshan Mandal, Nagpur
SHRI LEMDEO PATIL MAHAVIDYALAYA
Mandhal, Tah . Kuhi, Dist. Nagpur
(NAAC Accredited Institution)
WWW.lpmahavidyalaya.com
Fax : 07100-228388 Email : lemdeopatilmahavidyalaya@hotmail.com (07100)-220120 (off)

NAAC 2024/ Metrics Level Deviations/Cr.3.3.1 Date:- 10/09/2024

Criteria 3.3.1:	Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years
Clarification Asked:	HEI has not provided the link for the papers. HEI has proivded the link only for the journals, DVV has excluded the enters without link for the journal and paper. HEI needs to provide the proof for the journals included in UGC care listed journals.HEI needs to provide the Link landing to the research paper and link to the journal website. HEI also needs to provide the URL of the content page in case of a print journal and HEI needs to provide the proof for the journals to be present in the UGC care listed journals. HEI also needs to provide the first page of the paper highlighting the name of the author, year of publication, Affiliating institute. HEI also needs to provide the details of faculty publishing the paper such as date of joining and date of leaving the institute.
Response:	1) List of research paper published per teacher in the Journal with the Link landing to the research paper and link to the journal website is attached. **(Appendix-I)** 2) The proof for the journals included in UGC care listed journals are attached. **(Appendix-II)** 3) The first page of the paper highlighting the name of the author, year of publication, affiliating institute are attached. **(Appendix-III)** 4) The URL of the content page in case of a print journal is attached. **(Appendix-IV)** 5) The details of faculty publishing the paper such as date of joining and date of leaving the institute is attached. **(Appendix-V)**

Cr-3 Coordinator

IQAC Coordinator
IQAC
Co-ordinator
Shri. L.. P. Mahavidyalaya,
Mandhal.

Principal
Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuhi, Dist-Nagpur

Shri Lemdeo Patil Mahavidyalaya SEAL Mandhal

Appendix-I

Shri Chaitenyeshwar Shikshan Mandal, Nagpur
SHRI LEMDEO PATIL MAHAVIDYALAYA
Mandhal. Tah.. Kuhi, Dist. Nagpur
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Fax : 07100-228388 Email : lemdeopatilmahavidyalaya@hotmail.com (07100)-220120 (off)

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Study of photoluminescence of Tb^{3+} doped Sr_2CeO_4 phosphor for UV LED application	Deepak R. Taikar	Physics	Materials Today: Proceedings	2019-2020	2214-7853	https://www.sciencedirect.com/journal/materials-today-proceedings	https://doi.org/10.1016/j.matpr.2020.05.261	UGC care list
Hygrothermoelastic response of a finite solid circular cylinder	Navneet Kumar Lamba	Mathematics	Multidiscipline Modeling in Materials and Structures	2019-2020	1573-6105	https://www.emeraldgrouppublishing.com/journal/mmms	https://doi.org/10.1108/MMMS-12-2018-0207	UGC care list
Thermal behavior of a finite hollow cylinder in context of fractional thermoelasticity with convection boundary conditions.	Navneet Kumar Lamba	Mathematics	Journal of Thermal Stresses	2019-2020	0149-5739	https://www.tandfonline.com/journals/uths20	https://doi.org/10.1080/01495739.2020.1776182	UGC care list
Synthesis of Chromone Functionalized Chitosan Polymer: Application/Screening of Its Physical Parameters	Mahesh K. Gaidhane	Chemistry	Polymer Science, Series B	2019-2020	1560-0904	https://link.springer.com/journal/11499	https://doi.org/10.1134/S1560090420030045	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
PHARMACOKINETICS, DRUG-LIKENESS, MEDICINAL PROPERTIES, MOLECULAR DOCKING ANALYSIS OF SUBSTITUTED B-LACTAMS SYNTHEZIED VIA [BMIM][PF6]/]ET3NH]+[HSO4]- CATALYZED COUPLING REACTION	Mahesh K. Gaidhane	Chemistry	Chemistry: Bulgarian Journal of Science Education	2019-2020	0861-9255	https://www.ceeol.com/search/journal-detail?id=1682	https://www.ceeol.com/search/article-detail?id=854964	UGC care list
Antimicrobial Activity of Anti-Mosquito Rellent Plant Chloroxylon Swietenia	Smita Kharkale	Chemistry	Alochana chakra journal	2019-2020	2231-3990	http://www.alochonachakra.com/	https://app.box.com/s/tki1v2dnzmnpworsskb13h7ukcaxe7cw	UGC care list
Plagiarism and Library Integrity	Dilip Ganthale	Library	International Journal of Engineering, Education and Technology	2019-2020	2320-883X	http://journal.ardigitech.in/	http://journal.ardigitech.in/admin/papers/66000204c526c8.pdf	Peer reviewed

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Characterization of newly synthesized quaternary oxide of Cr-Zn-Cu-O and its applicaion to photo anode in photovoltaic cell	Pradeep Randiwe	Principal	International Journal of All Research Education and Scientific Methods	2020-21	2455-6211	https://www.ijaresm.com/	http://www.ijaresm.com/characterization-of-newly-synthesized-quaternary-oxide-of-cr-zn-cu-o-and-its-application-to-photo-anode-in-photovoltaic-cell	UGC care list
Photoelectrochemical studies of LaZn2Cu3O6.5 electrodes	Pradeep Randiwe	Principal	International Journal of Recent Scientific Research	2020-21	0976-3031	https://recentscientific.com/	https://recentscientific.com/photoelectrochemical-studies-lazn2cu3o65-electrodes	Peer reviewed
DEPRESSION-INDUCED PROBLEM FOR SPORTS MAN AND THEIR REMEDIES	Avinash Titarmare	Physical Education	B. Aadhar	2020-21	2278-9308			Peer reviewed
Study of energy transfer from Bi^{3+} to Tb^{3+} in Y_2O_3 phosphor and its application for W-LED	Deepak Taikar	Physics	Journal of Alloys and Compounds	2020-21	0925-8388	https://www.sciencedirect.com/journal/journal-of-alloys-and-compounds	https://doi.org/10.1016/j.jallcom.2020.154405	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Structural and Electrical Properties of Nano[Ni0.6Zn0.4Fe2O4] Spinel Ferrite	Deepak Taikar	Physics	International Journal of Scienctific Research in Science & Technology	2020-21	2395-602X	https://ijsrst.com/index.php/home	https://www.academia.edu/45102574/Structural_and_Electrical_Properties_of_Nano_Ni_0_6_Zn_0_4_Fe2_O4_Spinel_Ferrite	Peer reviewed
In vitro anticancer activity of thiazole based β-amino carbonyl derivatives against HCT116 and H1299 colon cancer cell lines; study of pharmacokinetics, physicochemical, medicinal properties and molecular docking analysis	Mahesh Gaidhane	Chemistry	Indian Journal of Chemistry - Section B (IJC-B)	2020-21	0975-0983	https://bib-pubdb1.desy.de/record/30144	http://op.niscair.res.in/index.php/IJCB/article/view/30155	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Innovational combination of hetero-bifunctional N-PEG quinoline scaffolds derivatives with improved anticancer activity against breast and colon cancer cell lines and P-glycoprotein, cytochrome p450 enzyme activity prediction	Mahesh Gaidhane	Chemistry	Turkish Journal of Chemistry	2020-21	1300-0527	https://journals.tubitak.gov.tr/chem/	https://journals.tubitak.gov.tr/chem/vol44/iss6/5/	UGC care list
A facile synthesis of some new pyrimidine-2,4,6-triones analogs and their *O*- β- D-glucosides P-glycoprotein and antioxidant, antimicrobial study, blood–brain barrier, cytochrome p450 enzyme activity prediction	Mahesh Gaidhane	Chemistry	Medicinal Chemistry Research	2020-21	1054-2523	https://link.springer.com/journal/44	https://link.springer.com/article/10.1007/s00044-020-02649-7	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Synthesis of Substituted Phenothiazines derivatives, Antioxidant, P-Glycoprotein, Cyp Enzyme Activity, HIA and BBB Prediction	Mahesh Gaidhane	Chemistry	Der Pharma Chemica	2020-21	0975-413X	https://www.derpharmachemica.com/	https://www.derpharmachemica.com/pharma-chemica/synthesis-of-substituted-phenothiazines-derivatives-antioxidant-pglycoprotein-cyp-enzyme-activity-hia-and-bbb-prediction-52601.html	UGC care list
Ultrasonic Behaviour and Molecular Relations of Dihydrofromazan in DMF at Different Concentrations and in Different Percentages of DMF Water Mixture	Smita Kharkale	Chemistry	International Journal of Engineering Development and Research	2020-21	2321-9939	https://rjwave.org/ijedr/index.php	https://rjwave.org/ijedr/viewpaperforall.php?paper=IJEDR2004039	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Impact of COVID-19: A mathematical model	Navneet Kumar Lamba	Mathematics	Journal of Interdisciplinary Mathematics	2020-21	0972-0502	https://www.tandfonline.com/journals/tjim20/about-this-journal#journal-metrics	https://doi.org/10.1080/09720502.2020.1833444	UGC care list
Time fractional heat transfer analysis in non-homogeneous thick hollow cylinder with internal heat generation and its thermal stresses	Navneet Kumar Lamba	Mathematics	International Journal of Thermodynamics	2020-21	1301-9724	https://dergipark.org.tr/en/pub/ijot	https://doi.org/10.5541/ijot.730617	UGC care list
Thermal Behavior of an annular fin in context of fractional thermo-elasticity with convection boundary conditions	Navneet Kumar Lamba	Mathematics	ANNALS of Faculty Engineering Hunedoara International Journal of Engineering	2020-21	1584-2665	https://annals.fih.upt.ro/	https://www.proquest.com/openview/477ca6625e4ed33c3759ec7a685a64a7/1?pq-origsite=gscholar&cbl=616472	UGC care list
Analysis of Nano-Scale Beam by Eigenvalue Approach in Modified Couple Stress Theory with Thermoelastic Diffusion	Navneet Kumar Lamba	Mathematics	Southeast Asian Bulletin of Mathematics	2020-21	0129-2021	http://www.seams-bull-math.ynu.edu.cn/	http://www.seams-bull-math.ynu.edu.cn/archive.jsp	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Mazi Janmathew: Wangmaien Mahatma	Tirthraj Kapgate	Marathi	Rainbow Multidisciplinary Peer Reviewed Annual Journal	2020-21	2394-6903			Peer reviewed
Marathi Kathechi Utkranti	Tirthraj Kapgate	Marathi	Research Journey	2020-21	2348-7143	https://www.researchjourney.net/		Peer reviewed
Grace Yancha Lalitbandhanchi Pruthgatmata	Tirthraj Kapgate	Marathi	Sanskruti international multidisciplinary research journal	2020-21	2455-1511	https://www.scholarimpact.org/2455-1511-sanskruti-international-multidisciplinary-research-journal.html	http://simrj.org.in/ListArticles.aspx?issueid=23	Peer reviewed
Suresh Bhatanchi Nantarchi Marathi Gazal	Tirthraj Kapgate	Marathi	B. Aadhar	2020-21	2278-9308			Peer reviewed
Dr. Babasaheb Ambedkar Yanche Fadnivishayak Vichar	Tirthraj Kapgate	Marathi	Tifan	2020-21	2231-573X			UGC care list
Digital Libraries and their Impact on Traditional Libraries	Dilip Ganthale	Library	International Journal of Management, IT & Engineering	2020-21	2249-0558	https://www.ijmra.us/itjournal.php	https://www.ijmra.us/project%20doc/2020/IJMIE_DECEMBER2020/IJMIE10Dec20-DS.pdf	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Swayam Courses for LIS Professionals	Dilip Ganthale	Library	International Journal of Research in Social Sciences	2020-21	2249-2496	https://www.ijmra.us/social_journal.php	https://www.ijmra.us/project%20doc/2021/IJRSS_JANUARY2021/IJRSSJan21-DG.pdf	Peer reviewed
Luminescence studies of $CaLa_4Si_3O_{13}$ doped with Er^{3+} ions	Deepak Taikar	Physics	Optik Journal	2021-22	0030-4026	https://www.sciencedirect.com/journal/optik	https://doi.org/10.1016/j.ijleo.2021.167413	UGC care list
Synthesis and Luminescence Study of n-UV Excitable Tm^{3+}-Activated Blue Phosphor	Deepak Taikar	Physics	Macromolecular Symposia	2021-22	1521-3900	https://onlinelibrary.wiley.com/journal/15213900	https://doi.org/10.1002/masy.202100019	UGC care list
Hygrothermoelastic response of a finite hollow circular cylinder	Navneet Kumar Lamba	Mathematics	Waves in Random and Complex Media	2021-22	1745-5049	https://www.tandfonline.com/journals/twrm20	https://doi.org/10.1080/17455030.2022.2030501	UGC care list
Thermoelastic modeling of time fractional heat conduction in circular disk with internal heat generation	Navneet Kumar Lamba	Mathematics	Samriddhi: A journal of Physical Sciences, Engineering and Technology	2021-22	2229-7111	https://smsjournals.com/	https://doi.org/10.18090/samriddhi.v13spli02.34	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Thermosensitive response of a functionally graded cylinder with fractional order derivative	Navneet Kumar Lamba	Mathematics	International journal of applied Mechanics and Engineering	2021-22	2353-9003	https://www.ijame-poland.com/	https://doi.org/10.2478/ijame-2022-0008	UGC care list
Valuation of Genotoxic Effect of Aqueous Organic compound with Allium Sativum (Garlic)	Smita Kharkale	Chemistry	International journal of Advanced Research in Science, Communication and Technology	2021-22	2581-9429	https://www.ijarsct.co.in/	https://ijarsct.co.in/Paper2349.pdf	Peer reviewed
Trace Elements Analysis in Ground Water used for Drinking Purposes	Mahesh Gaidhane	Chemistry	Aayushi International Interdisciplinary Research Journal	2021-22	2349-638X	http://www.aiirjournal.com/	http://www.aiirjournal.com/uploads/Articles/1654625410Special%20Issue%20109%20Upload%20Copy.pdf	Peer reviewed
Loknath Yashwant Yanchya Kaviteche Wegadepan	Tirthraj Kapgate	Marathi	Reseach Journey	2021-22	2348-7143	https://www.researchjourney.net/		Peer reviewed
Marathi Bhashantarit Sahityane Vachakanchi Abhiruchi Samruddha keli	Tirthraj Kapgate	Marathi	Worldwide Journal of Multidisciplinary Research and Development	2021-22	2454-6615	https://wwjmrd.com/	https://wwjmrd.com/archive/2022/5/2051/	Peer reviewed

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						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Ganpat wanyache kirkol kavitanche dukan	Tirthraj Kapgate	Marathi	Kavita-Rati	2021-22	2278-9243	https://kavitarati.org/		UGC care list
White light emission via Pb^{2+} to Dy^{3+} energy transfer mechanism in $CaTiO_3$ phosphor	Deepak Taikar	Physics	Optik Journal	2022-23	0030-4026	https://www.sciencedirect.com/journal/optik	https://doi.org/10.1016/j.ijleo.2022.169215	UGC care list
Optical transitions and radiative properties of green emitting Ho^{3+}:YVO_4 phosphor	Deepak Taikar	Physics	RSC Advances	2022-23	2046-2069	https://www.rsc.org/journals-books-databases/about-journals/rsc-advances/	https://pubs.rsc.org/en/content/articlehtml/2023/ra/d2ra06287a	UGC care list
Effect on Allium cepa and Allium sativum by organic substance of 1,2,4,5-tetrazin	Smita Kharkale	Chemistry	Journal of Emerging Technologies and Innovative Research	2022-23	2349-5162	https://www.jetir.org/	http://www.jetir.org/papers/JETIR2304A62.pdf	UGC care list
The Study of The Changing Nature of Career Opportunitites in Sports	Avinash Titarmare	Physical Education	B. Aadhar	2022-23	2278-9308			Peer reviewed
The Study of National Code Against Age Fraud in Sports and its Current Status	Avinash Titarmare	Physical Education	Health & Human Rights	2022-23	978-93-91305-91-8			Peer reviewed

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Memory impact of hygrothermal effect in a hollow cylinder by theory of uncoupled-coupled heat and moisture	Navneet Lamba	Mathematics	Multidiscipline Modeling in Materials and Structures	2022-23	1573-6105	https://www.emerald.com/insight/publication/issn/1573-6105	https://doi.org/10.1108/MMMS-06-2022-0117	UGC care list
A Brief Note on Space Time Fractional Order Thermoelastic Response in a Layer	Navneet Lamba	Mathematics	Applications and Applied Mathematics: An International Journal (AAM)	2022-23	1932-9466	https://digitalcommons.pvamu.edu/aam/	https://digitalcommons.pvamu.edu/aam/vol18/iss1/18/	UGC care list
Zadipatti Rangabhumiche mud dandar loknatyat	Tirthraj Kapgate	Marathi	Research Journey	2022-23	2348-7143	https://www.researchjourney.net/		Peer reviewed
Nanocrystalline α-Fe2O3: A superparamagnetic material for w-LED application and waste water treatment	Deepak Taikar	Physics	Chemical Data Collections	2023-24	2405-8300	https://www.sciencedirect.com/journal/chemical-data-collections	https://doi.org/10.1016/j.cdc.2023.101083	UGC care list
Formulation of calcium based 8-HQ fluorescent paint for fluorescent paint applications	Ritesh Raikundliya	Physics	Materials Letter:X	2023-24	2590-1508	https://www.sciencedirect.com/journal/materials-letters-x	https://doi.org/10.1016/j.mlblux.2023.100211	UGC care list

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
MEMORY DEPENDENT RESPONSE IN AN INFINITELY LONG THERMOELASTIC SOLID CIRCULAR CYLINDER	Navneet Lamba	Mathematics	PNRPU Mechanics Bulletin	2023-24	2226-1869	https://ered.pstu.ru/index.php/mechanics/index	https://ered.pstu.ru/index.php/mechanics/article/view/4162	UGC care list
Behavioural Analysis of Infectious Diseases in Two Main Age Groups using a Mathematical Approach	Navneet Lamba	Mathematics	The Indian Journal of Technical Education	2023-24	0971-3034	http://www.isteonline.in/Viewtopics.aspx?MenuId=IJTE_Special_Issue_1416	http://www.isteonline.in/Datafiles/cms//Special%20Issues//Special%20issue%20September%202023.pdf	Peer reviewed
Deflection Behaviour Due to the Response of the Caputo-Fabrizio Fractional Derivative in a Thermoelastic Disc with Heat Generation	Navneet Lamba	Mathematics	The Indian Journal of Technical Education	2023-24	0971-3034	http://www.isteonline.in/Viewtopics.aspx?MenuId=IJTE_Special_Issue_1416	http://www.isteonline.in/Datafiles/cms//Special%20Issues//Special%20issue%20September%202023.pdf	Peer reviewed
Medicinal Perspectives: Synthetic and Characterization of 1, 2, 4-Triazole, 4-Oxidiazole and 4-Oxaazolidinones	Mahesh Gaidhane	Chemistry	International Journal of Advance and Applied Research	2023-24	2347-7075	https://ijaar.co.in/	https://zenodo.org/records/10851528	Peer reviewed

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		
						Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
The Role of Audio Books and Video Books in English Language Teaching (ELT)	Sunil Alone	English	Smart Move Journal IJELLH	2023-24	2582-3574	https://ijellh.com/index.php/OJS/index	https://doi.org/10.24113/ijellh.v11i9.11462	Peer reviewed
The Role of National Service Scheme (NSS) and National Cadet Corps (NCC) in Nation Building	Sunil Alone	English	International Research Journal of Humanities and Interdisciplinary Studies (IRJHIS)	2023-24	2582-8568	https://irjhis.com/Default.aspx	https://doi-ds.org/doilink/08.2023-61763648/IRJHIS2308015	Peer reviewed
Challenges in Teaching English as a Second Language to Rural Students in India	Sunil Alone	English	International Journal of English and Studies (IJOES)	2023-24	2581-8333	https://www.ijoes.in/	https://www.ijoes.in/papers/v6i4/9.IJOES-SUNIL(49-53).pdf	Peer reviewed

Shri Lemdeo Patil Mahavidyalaya SEAL Mandhal

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuhi, Dist-Nagpur

Appendix-II

Shri Chaitenyeshwar Shikshan Mandal, Nagpur
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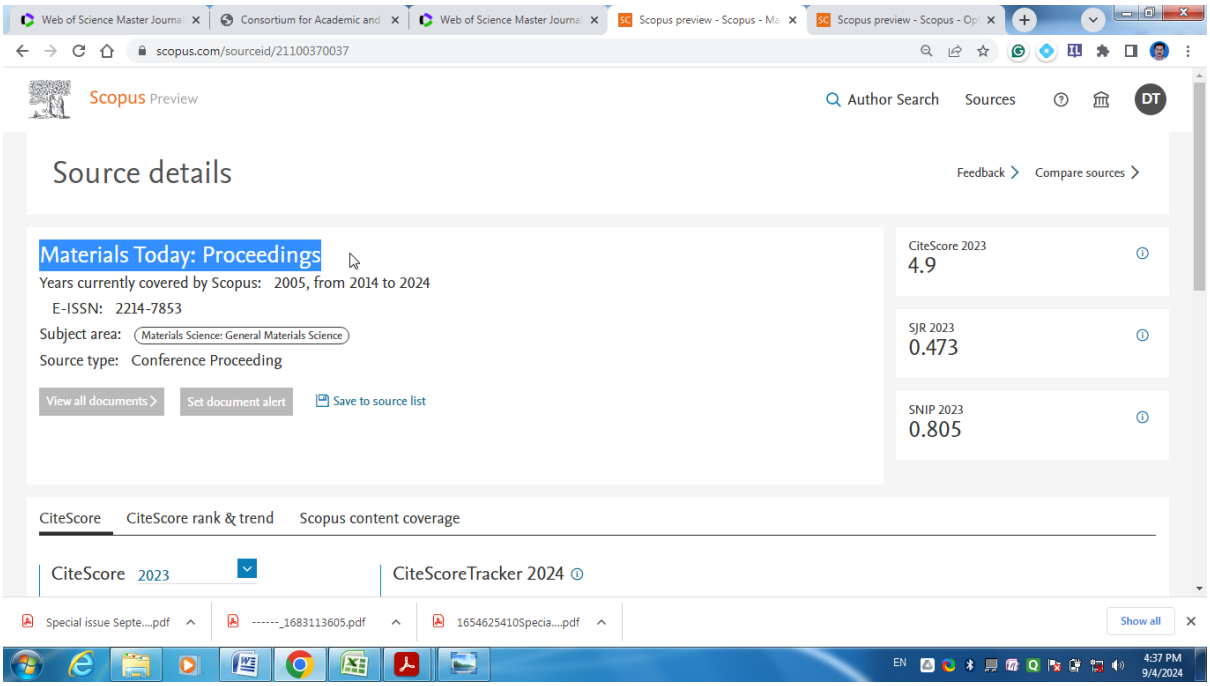
Proof for the journals included in UGC care listed journals



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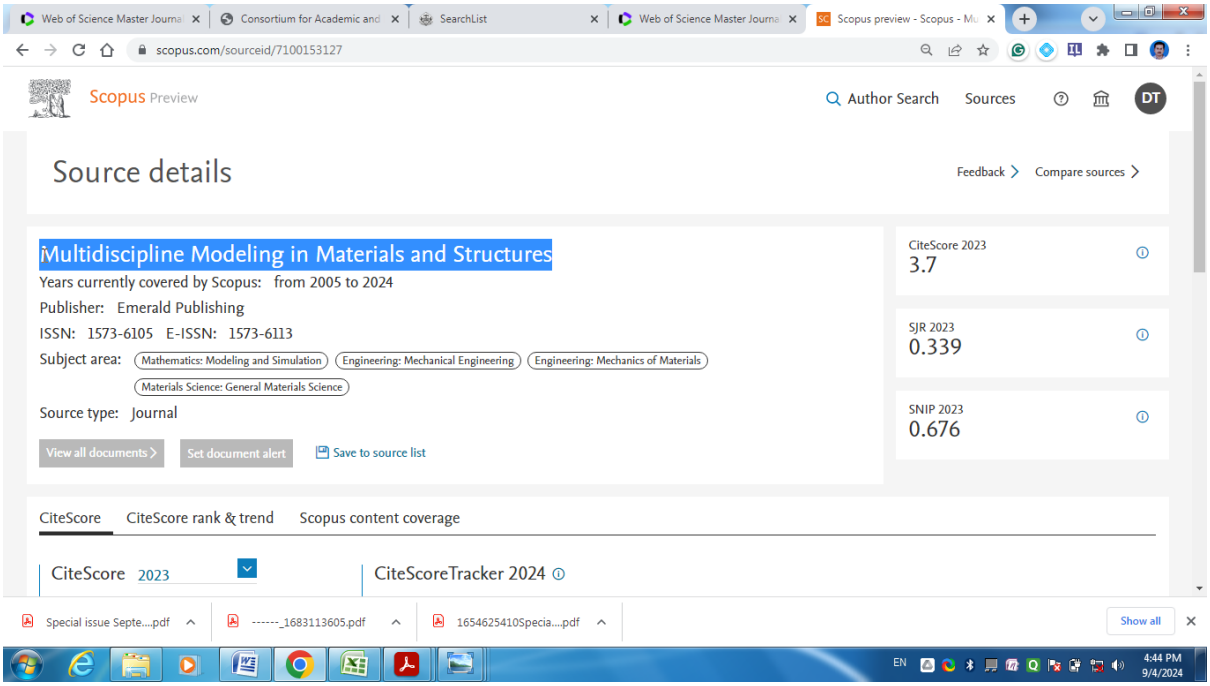

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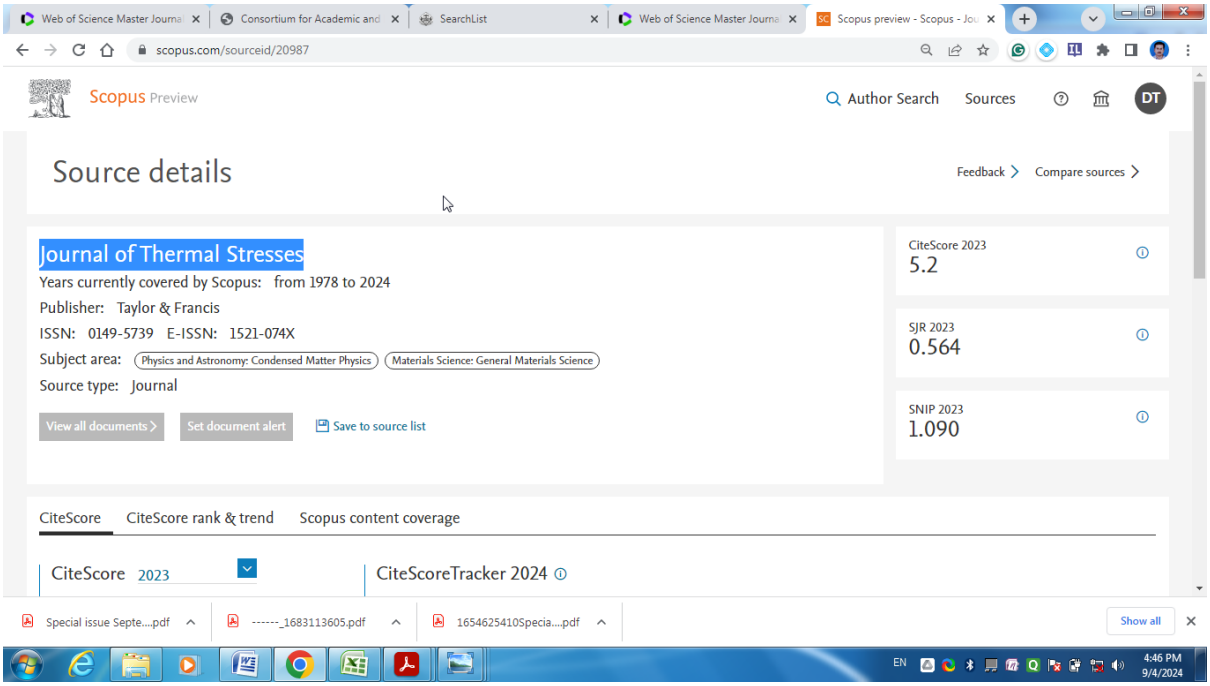

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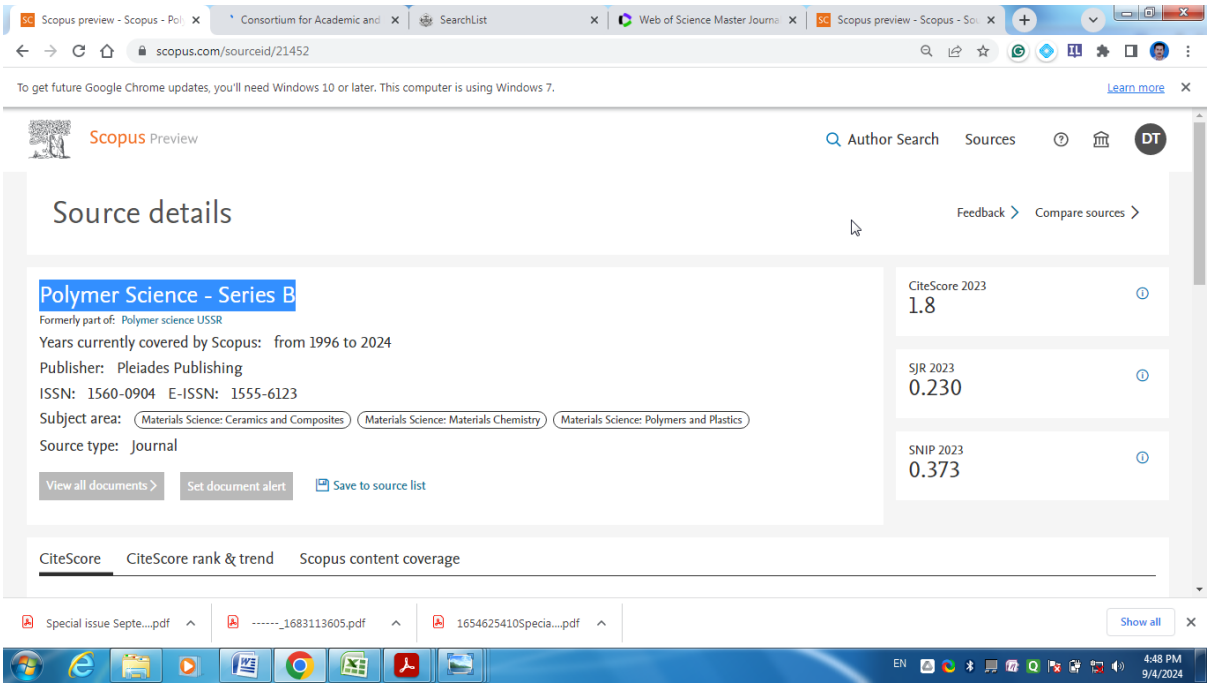

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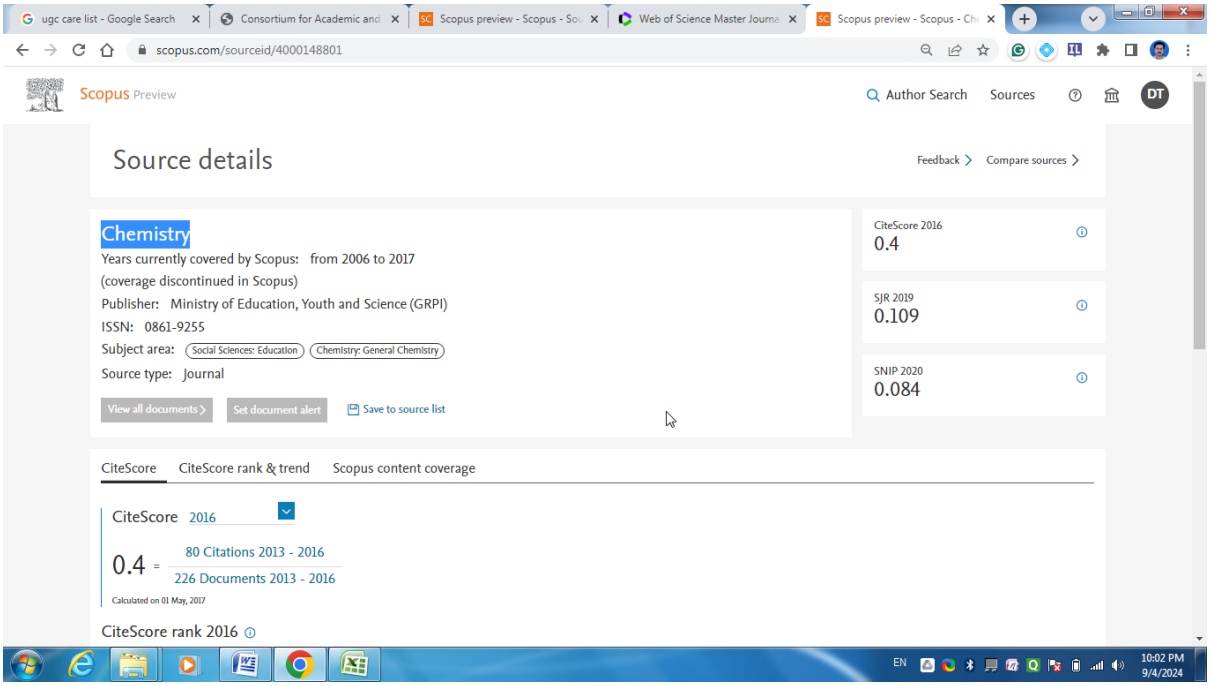

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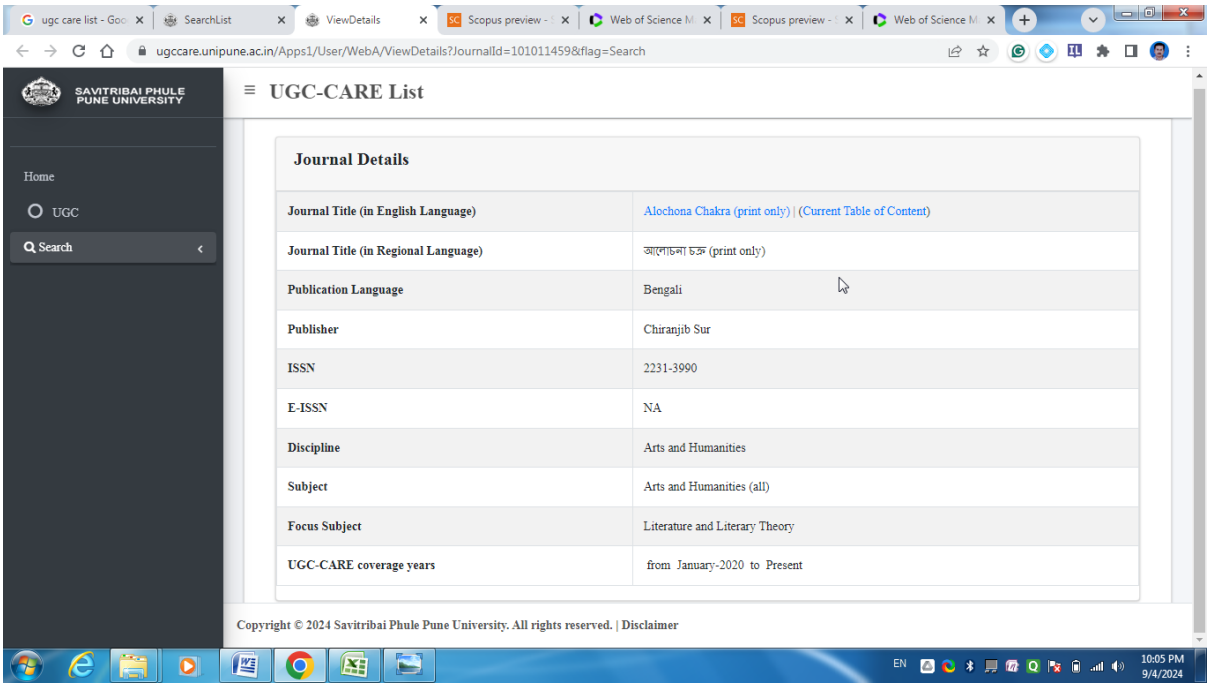

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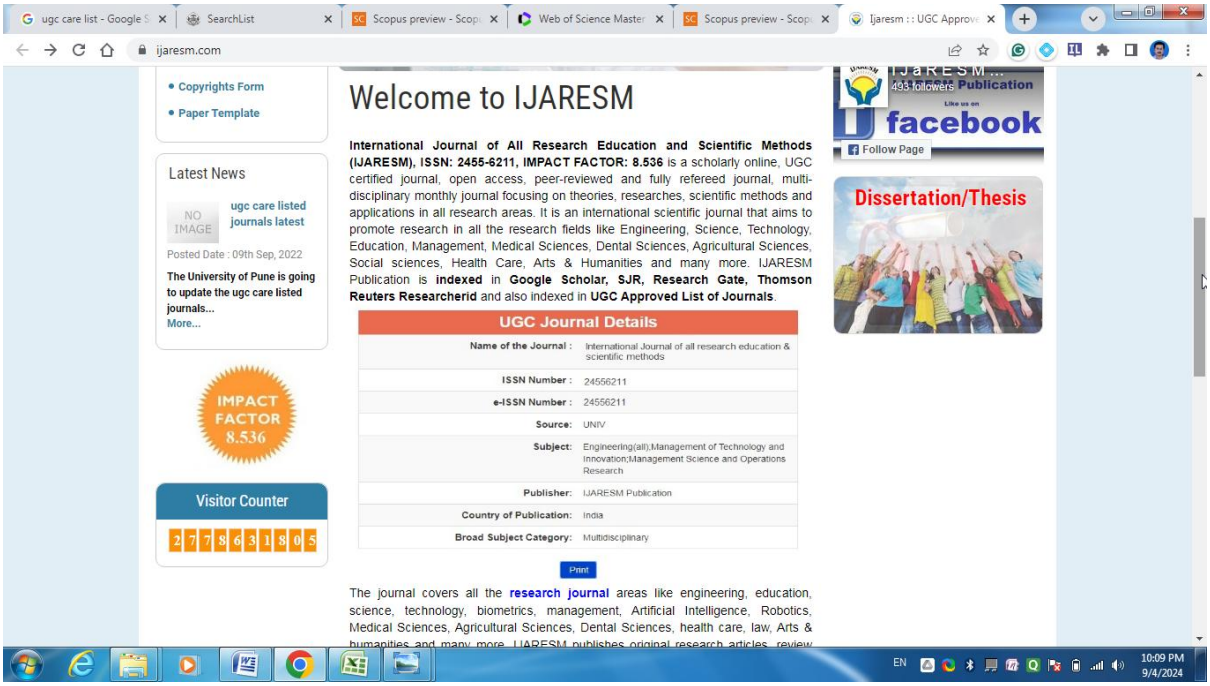

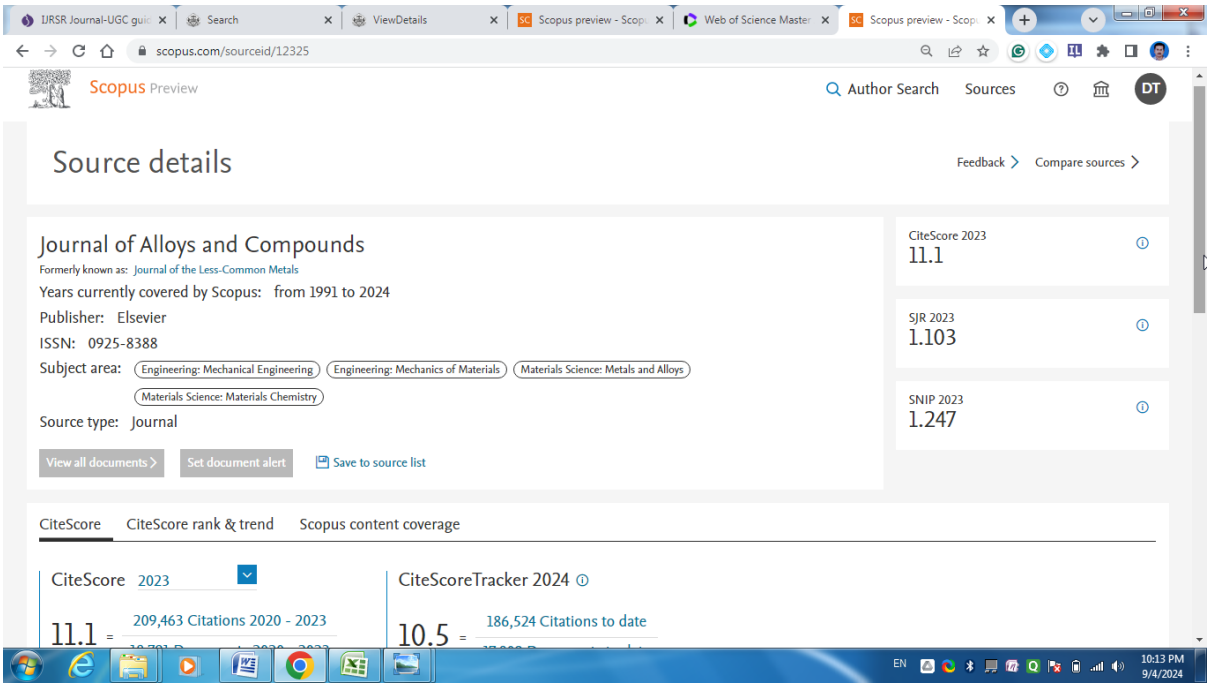

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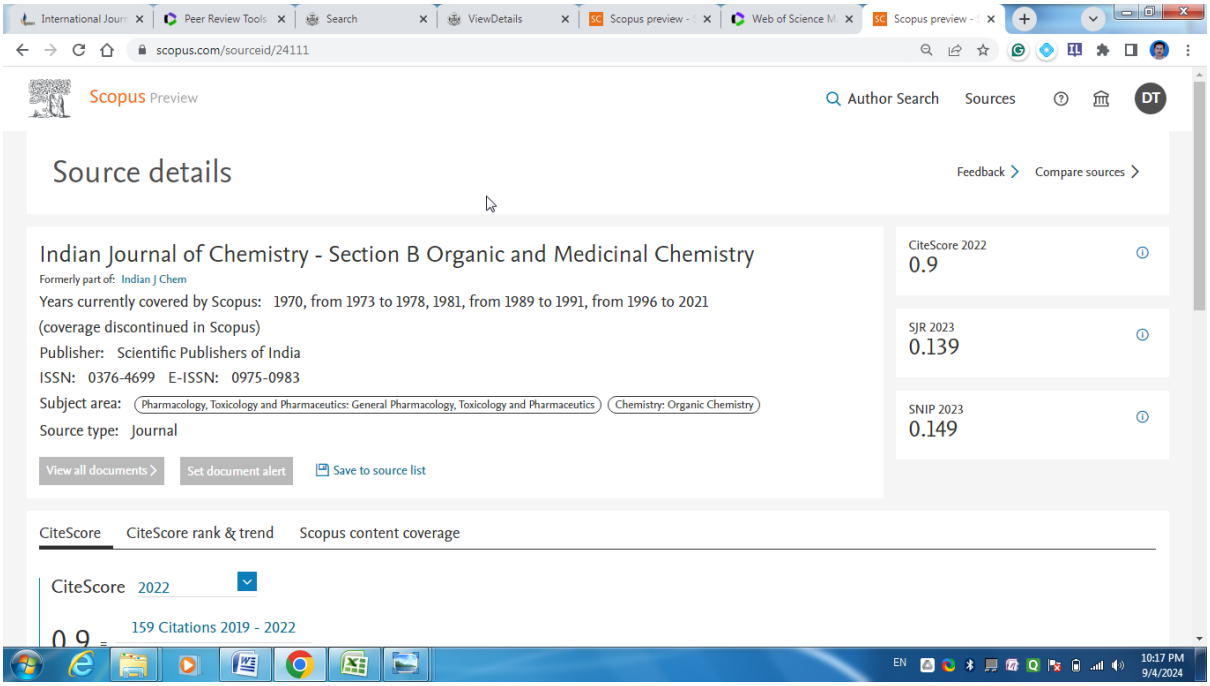

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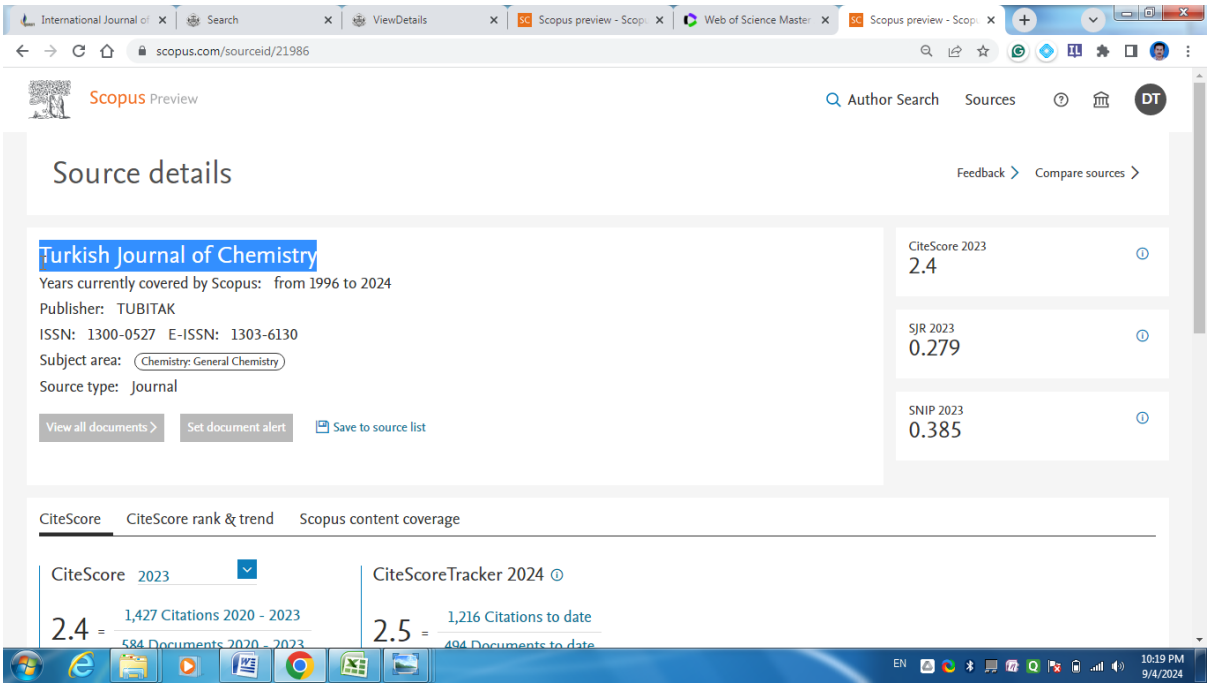

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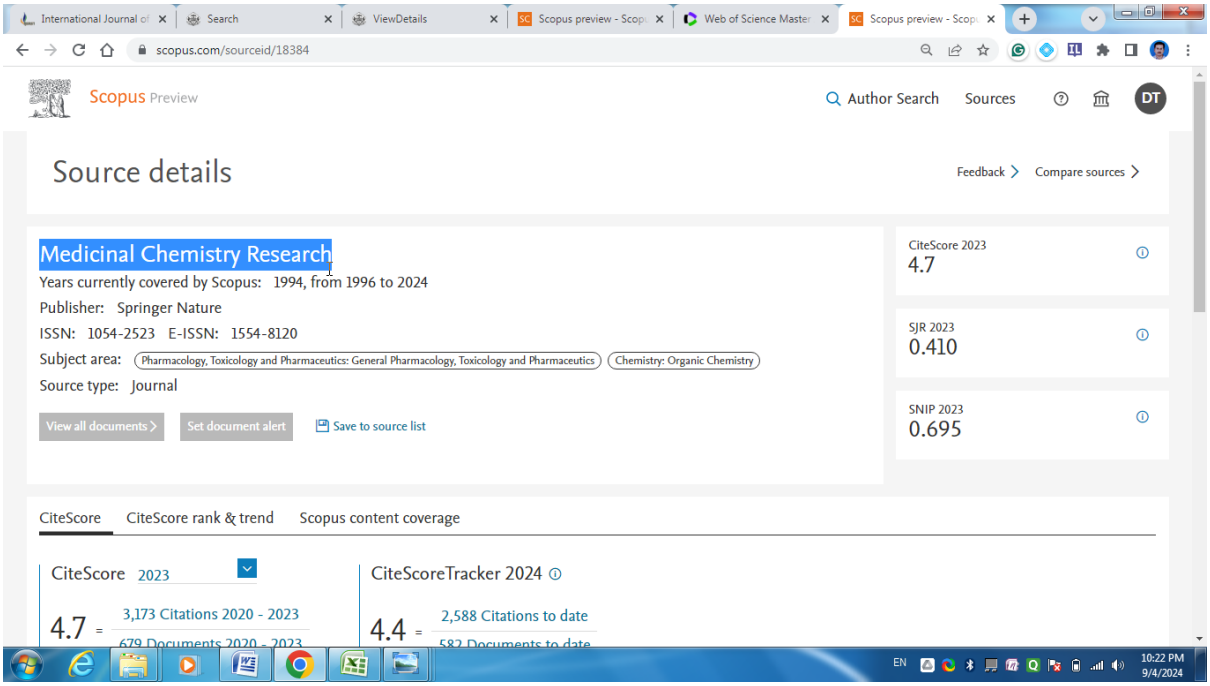

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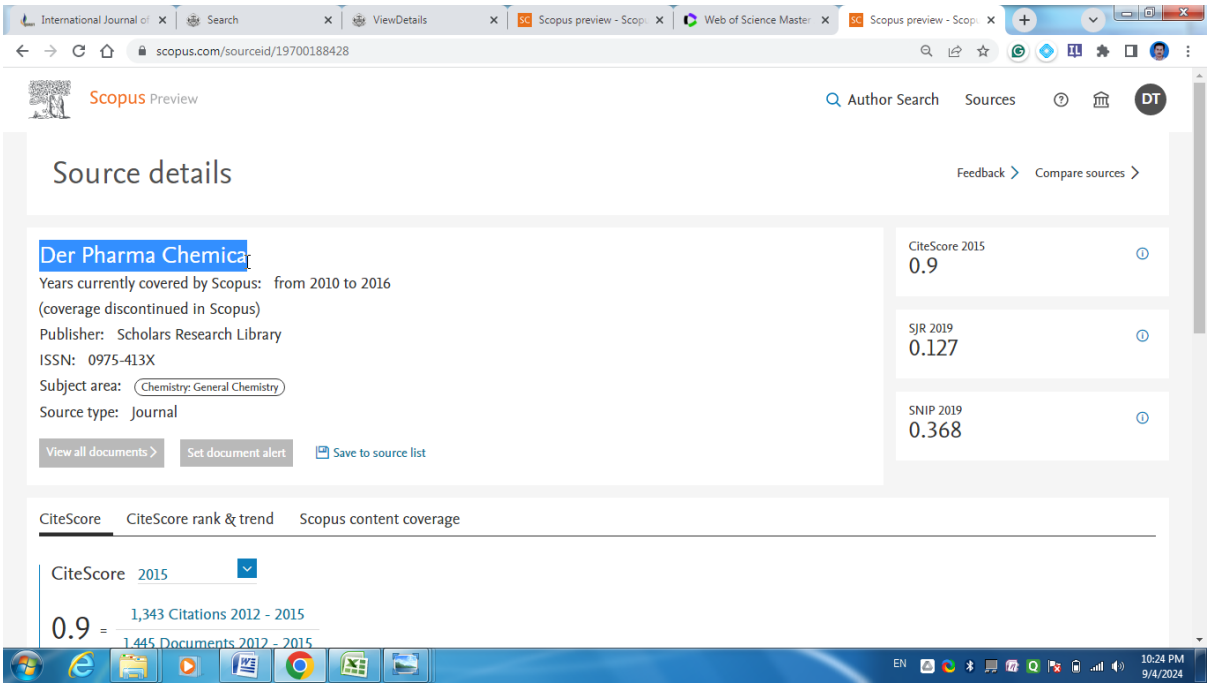

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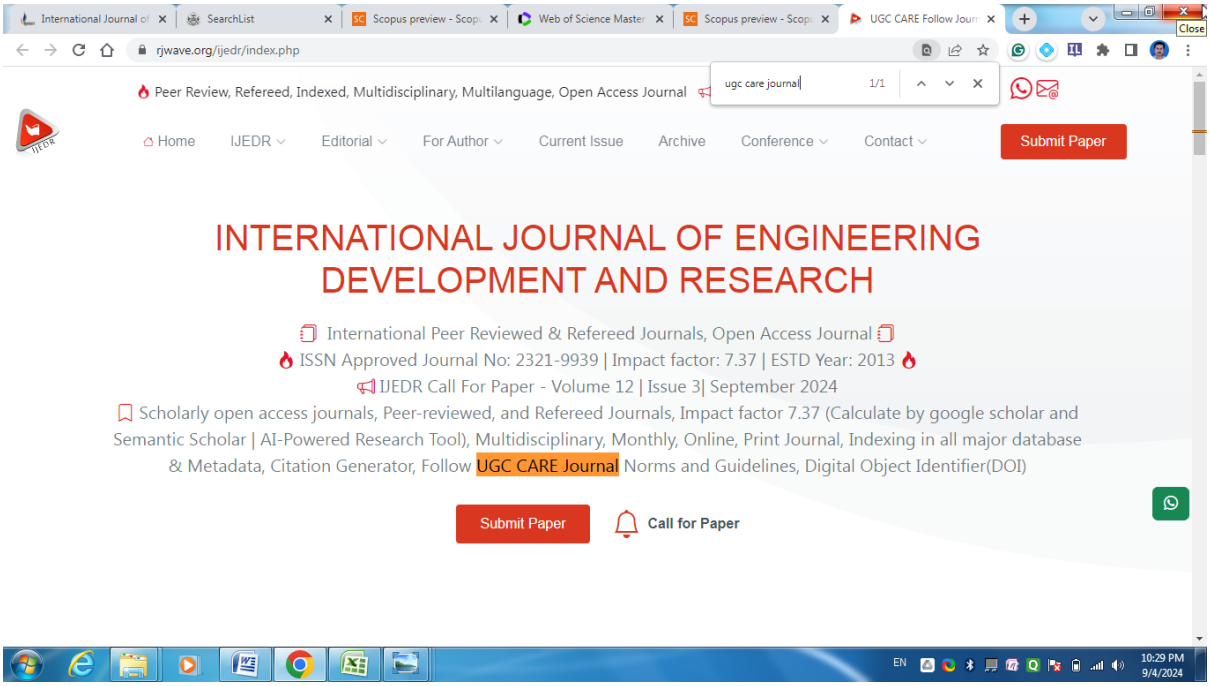

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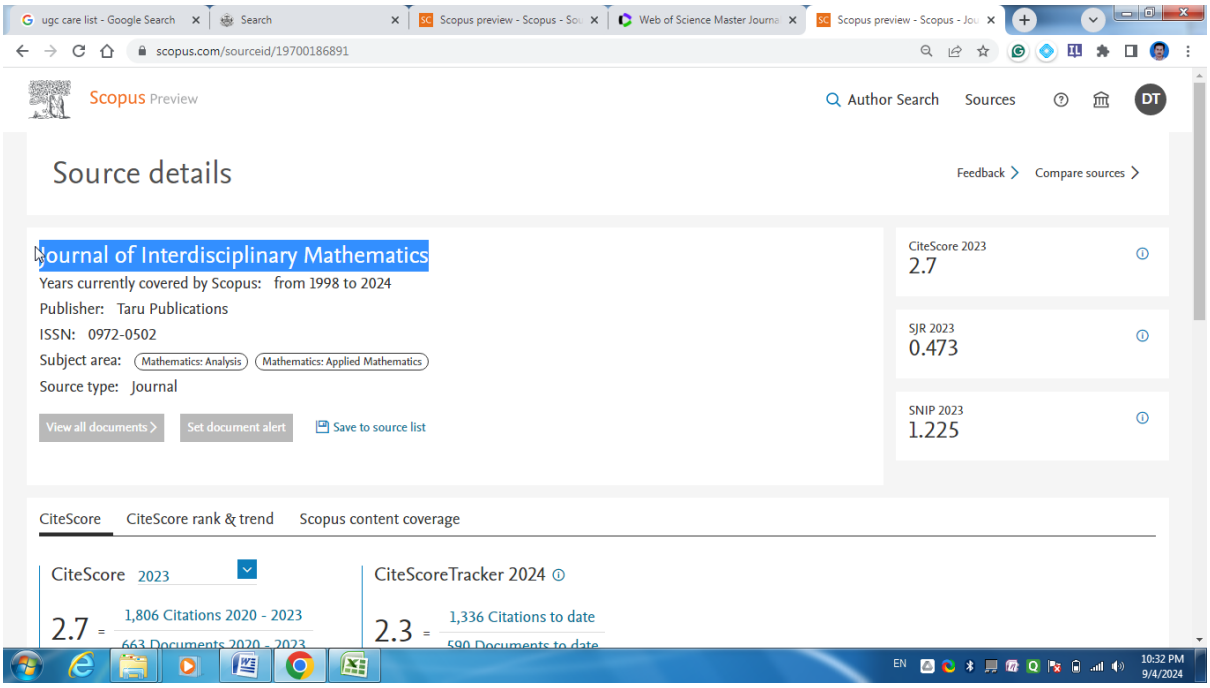

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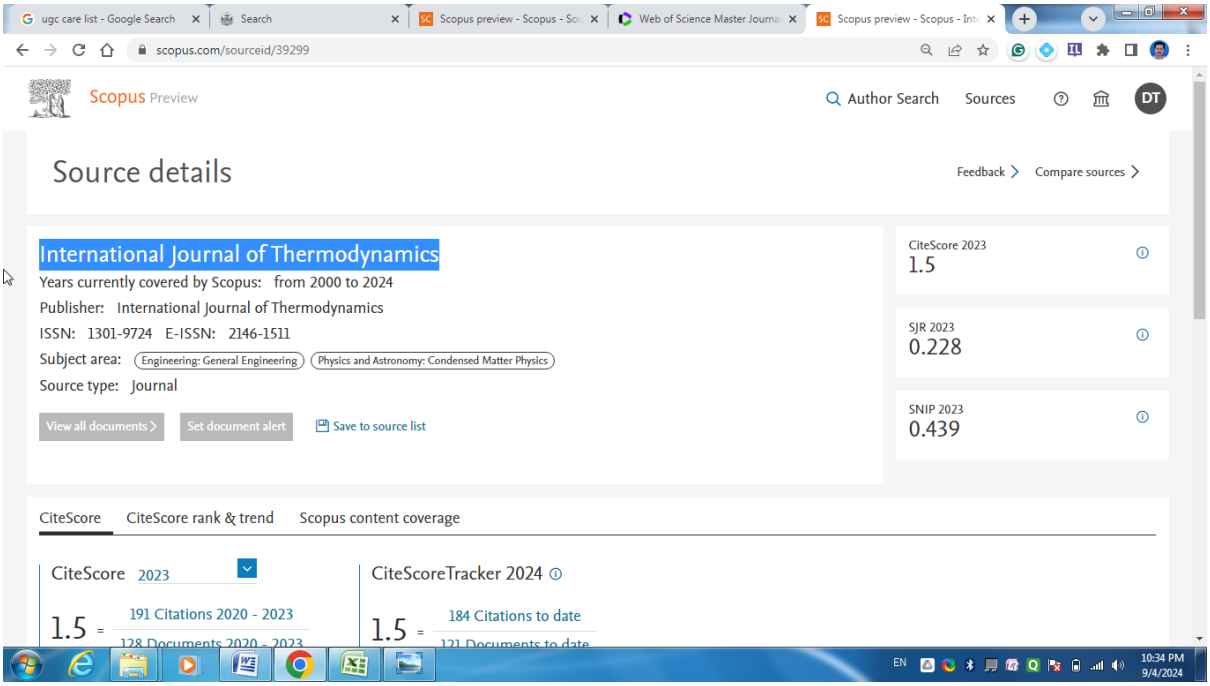

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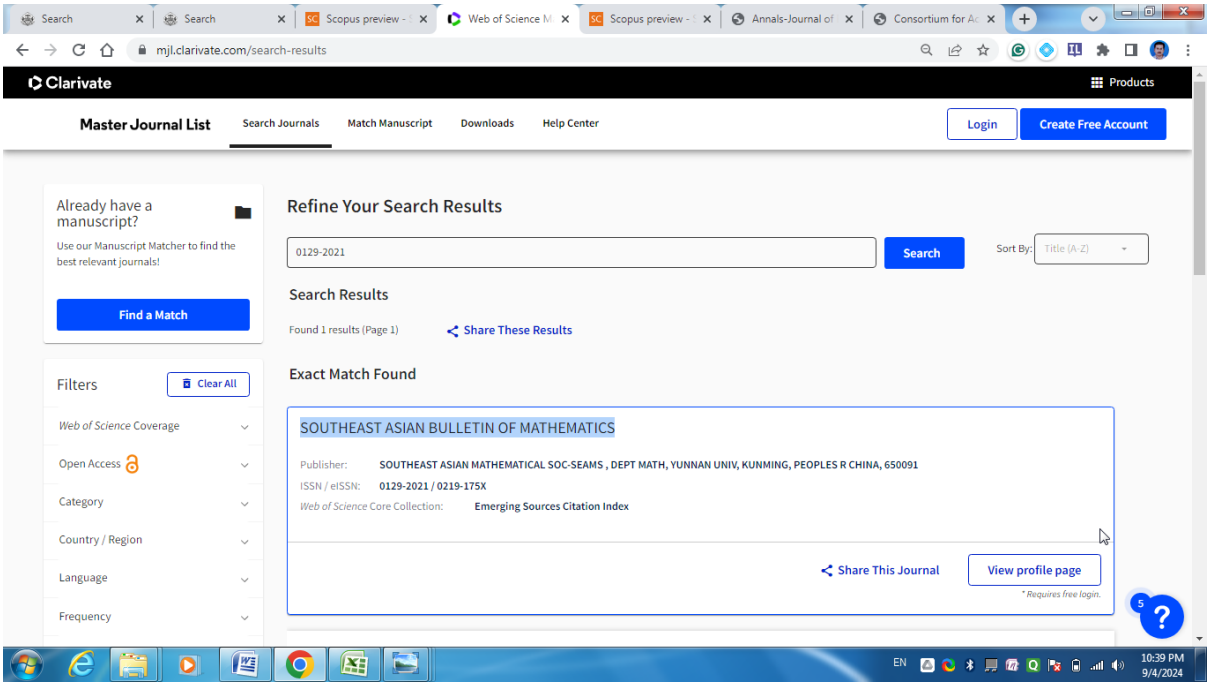

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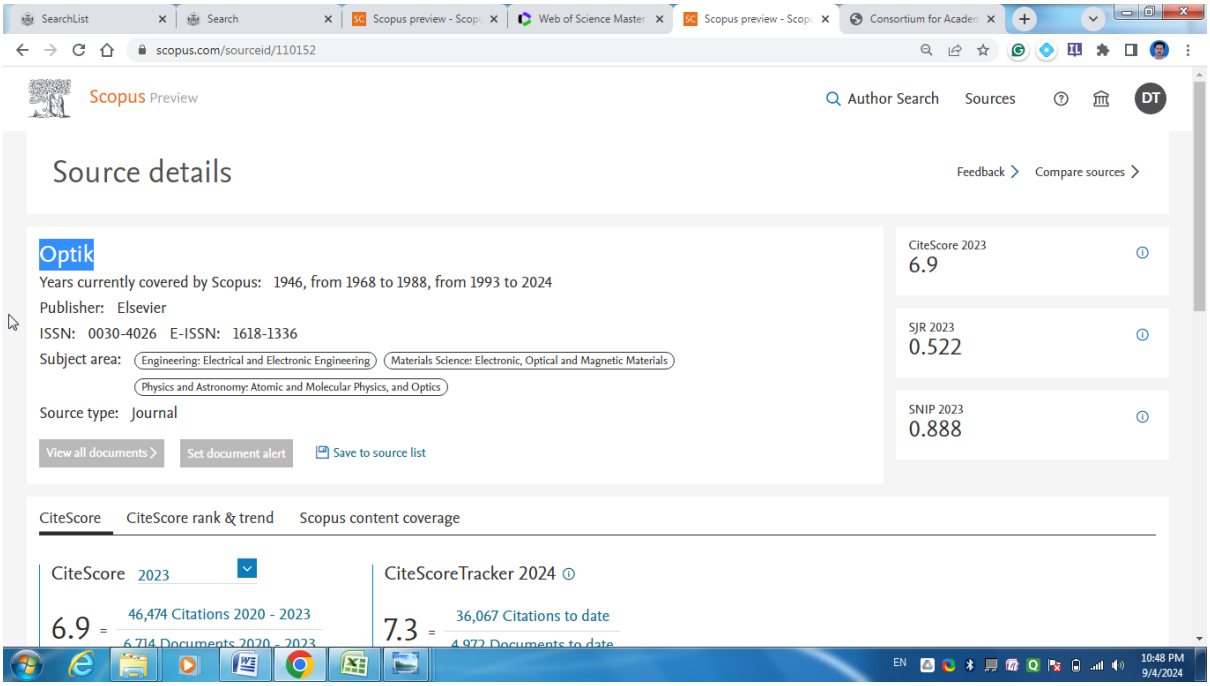

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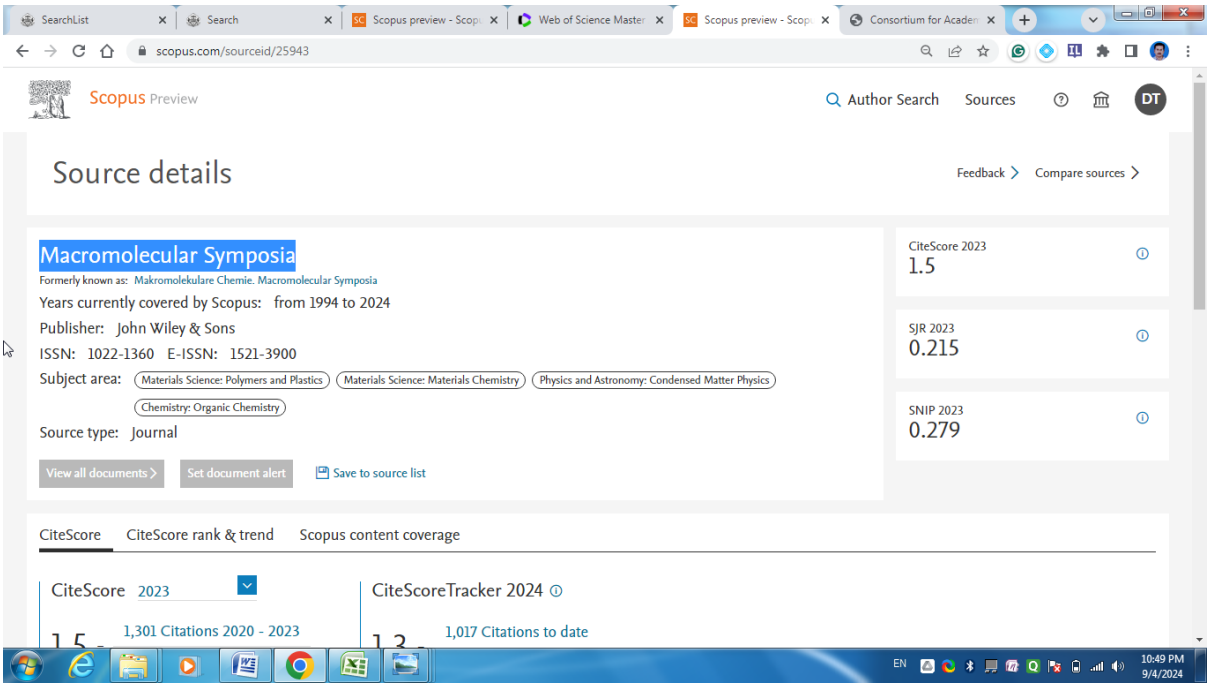

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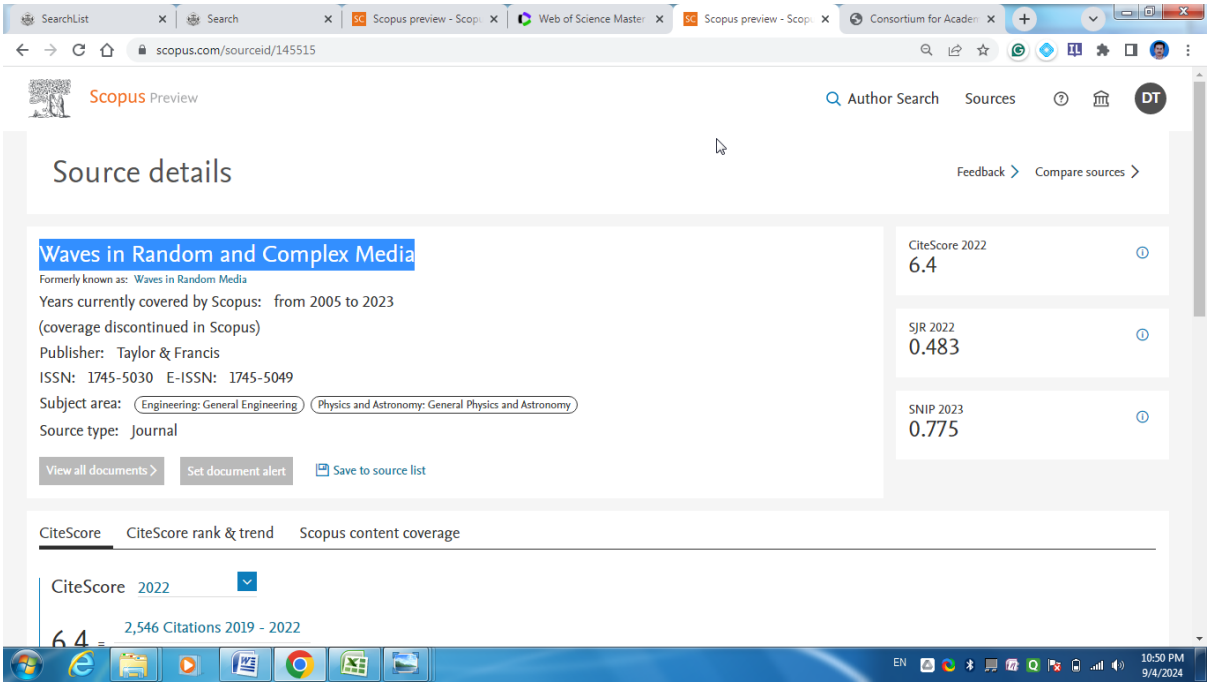

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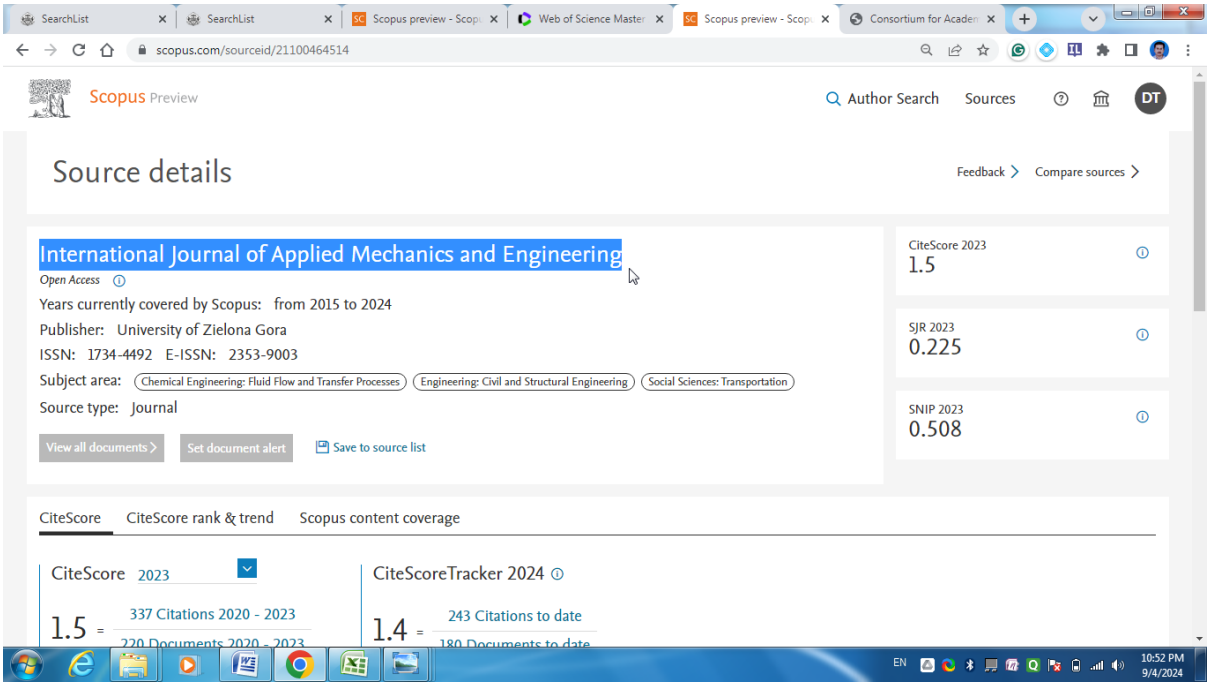

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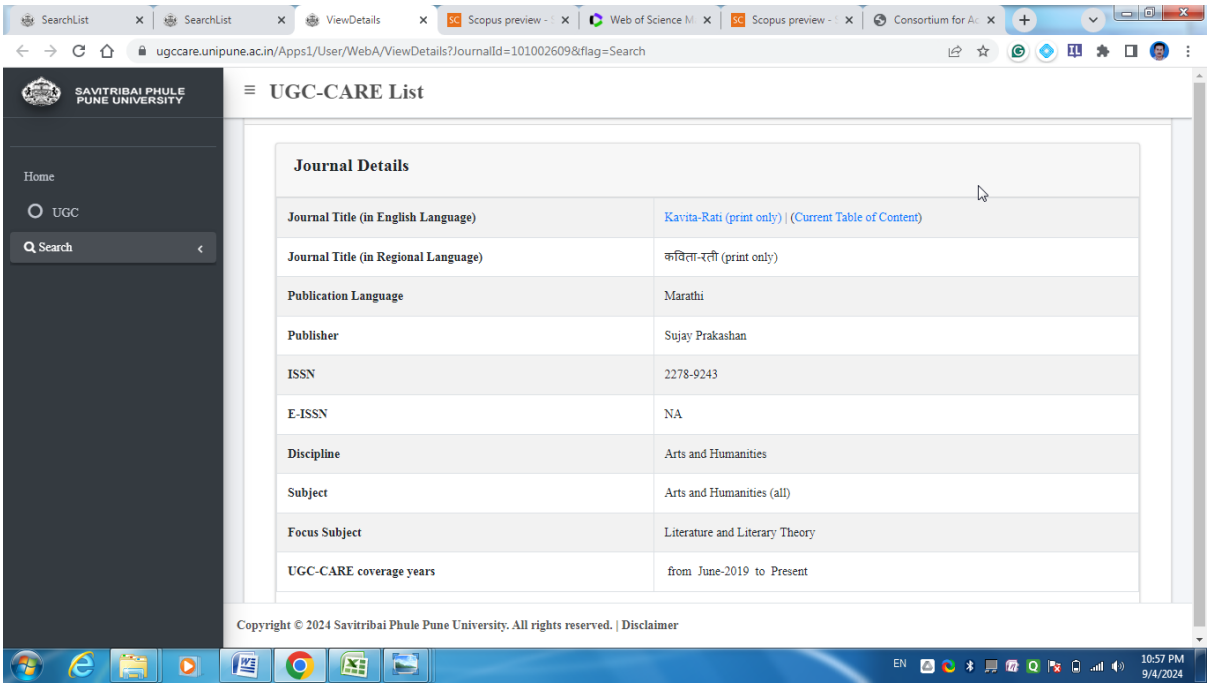

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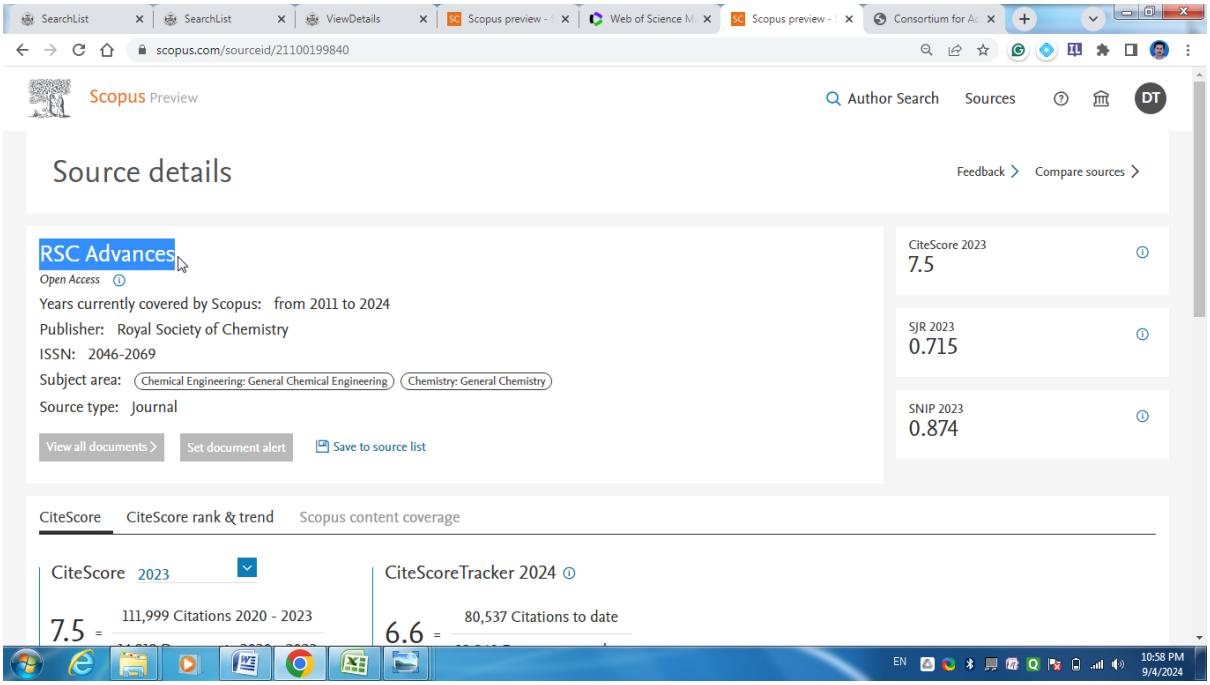

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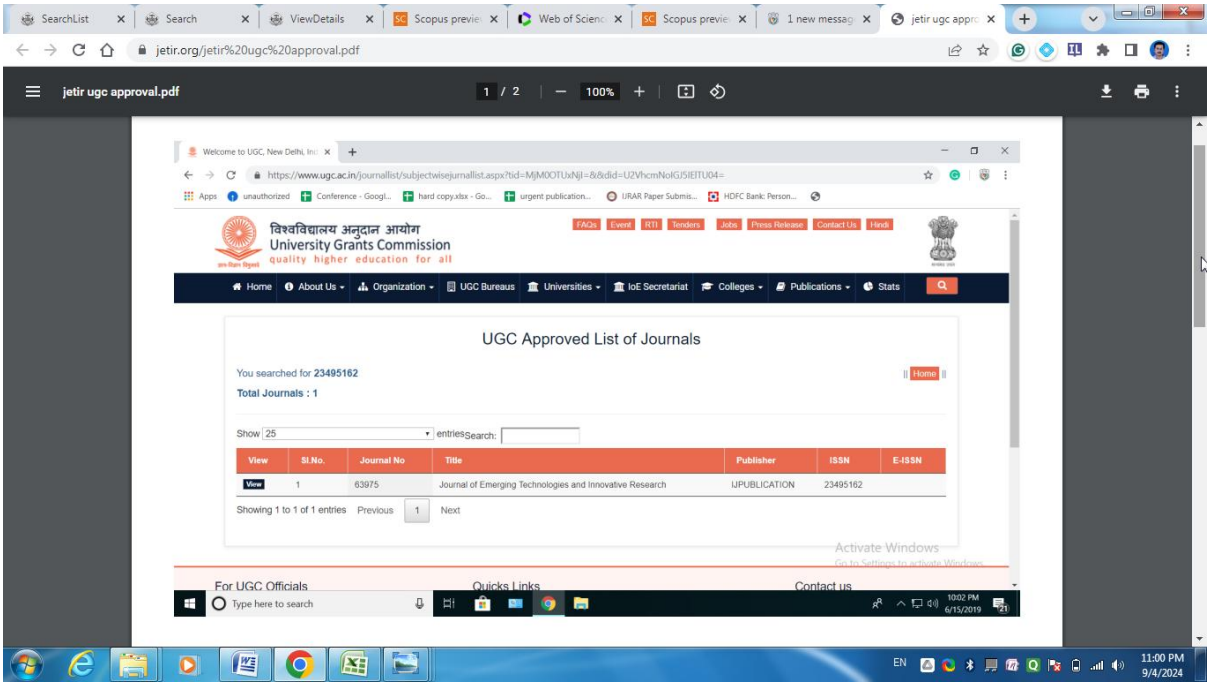

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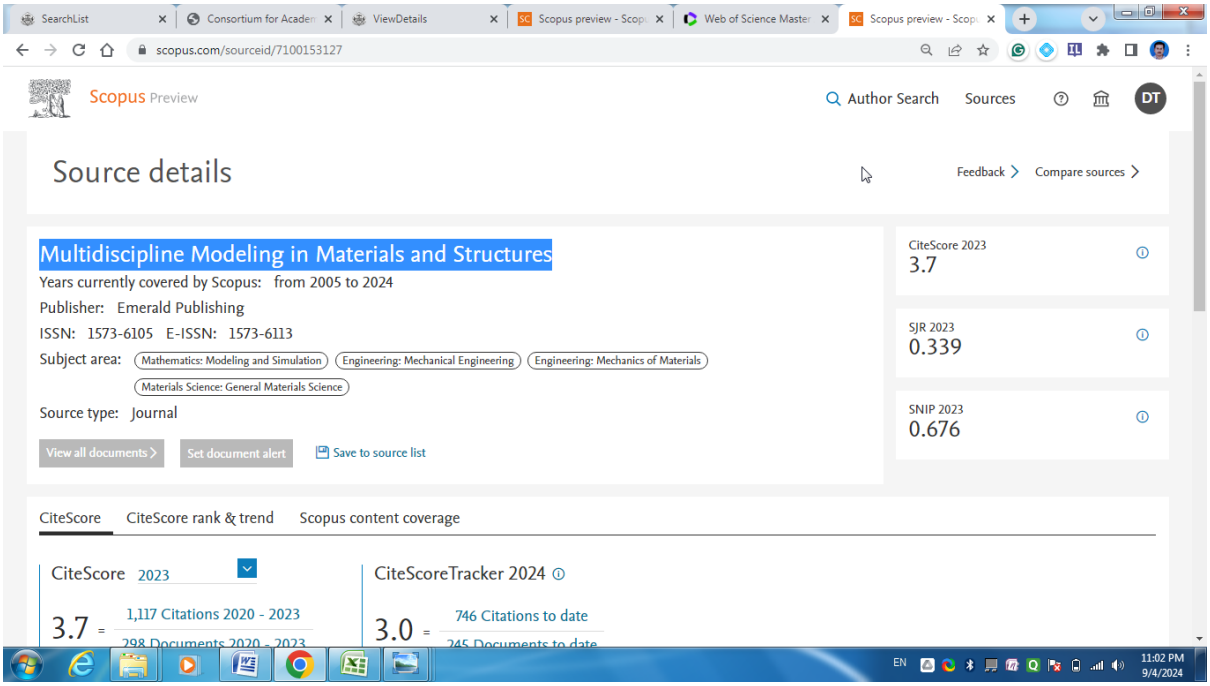

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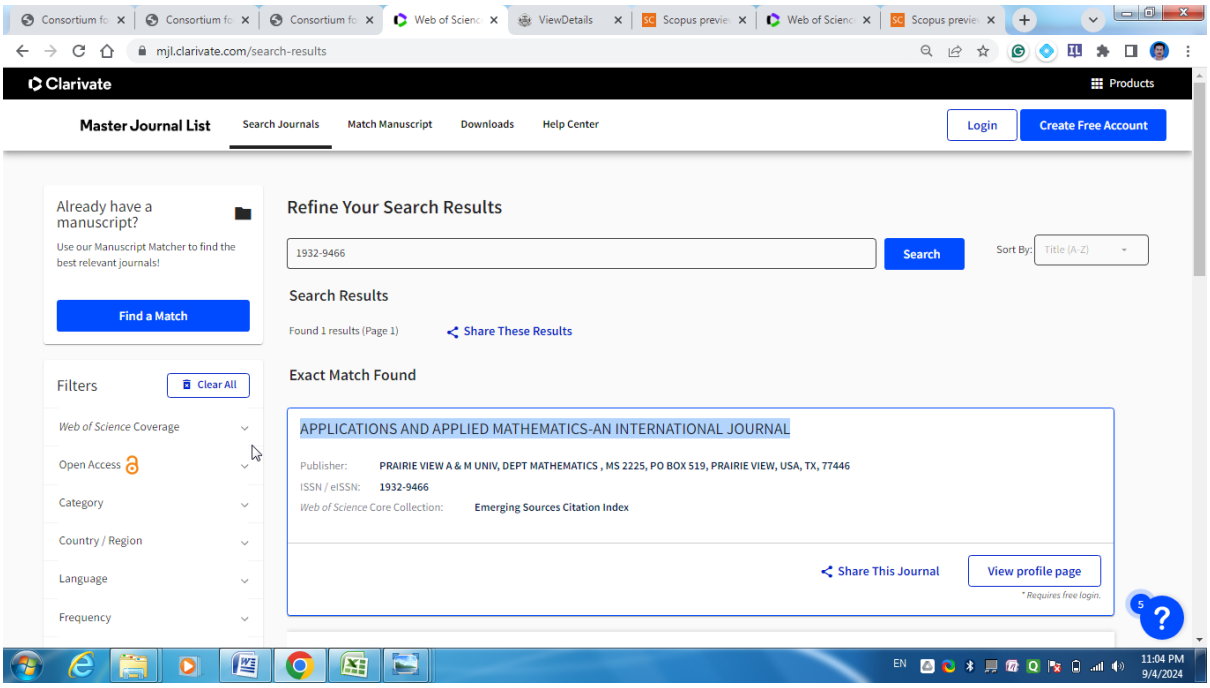

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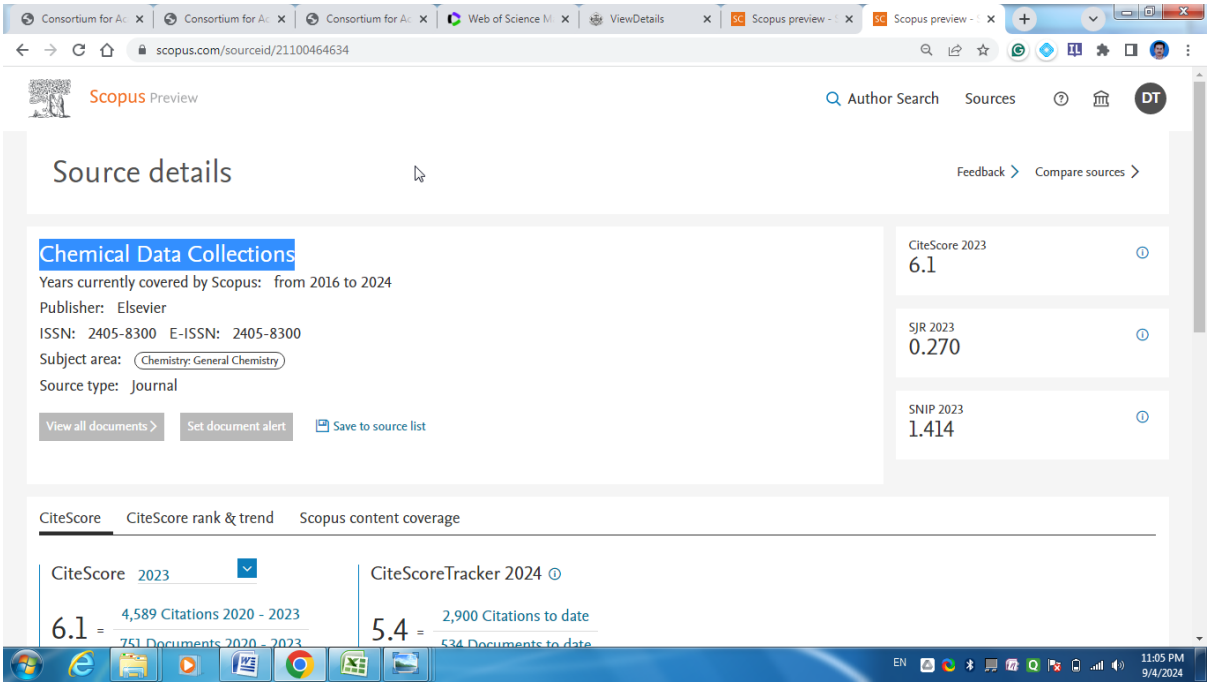

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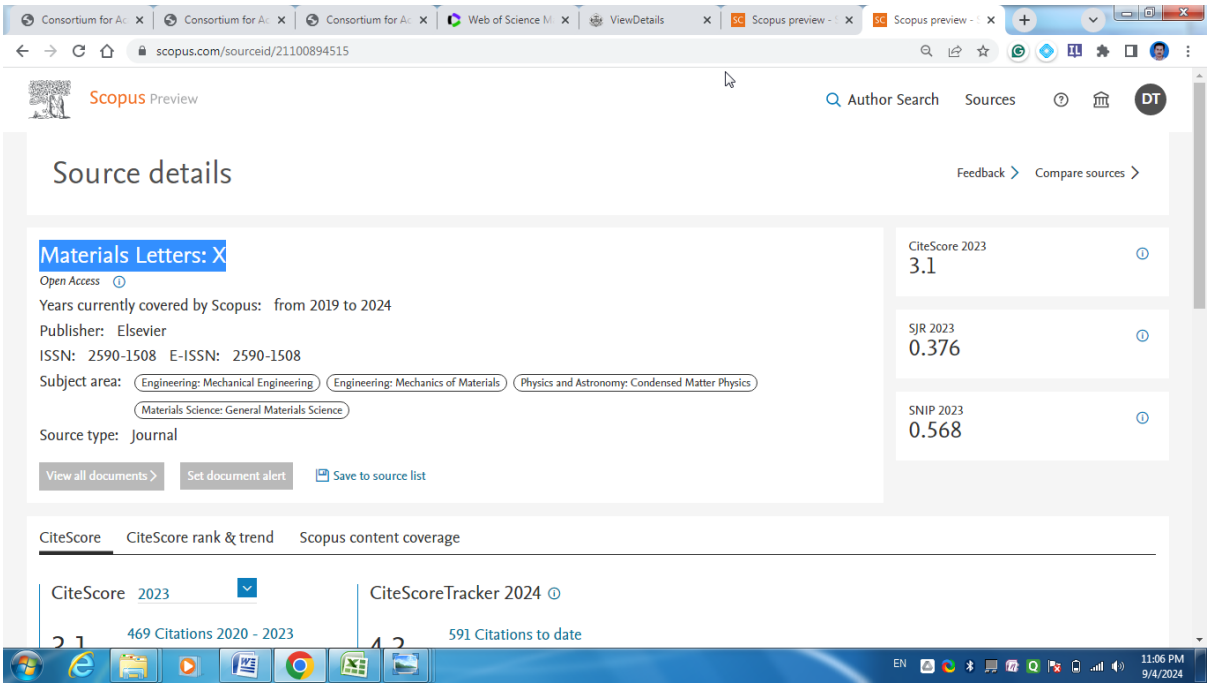

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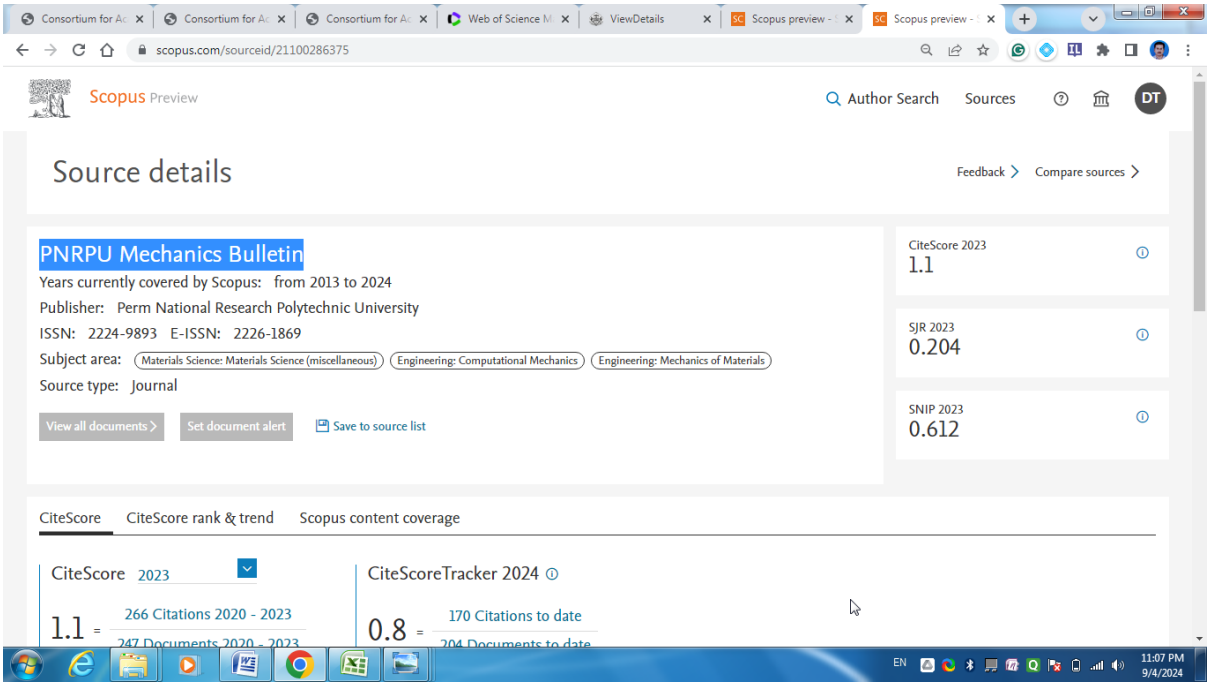

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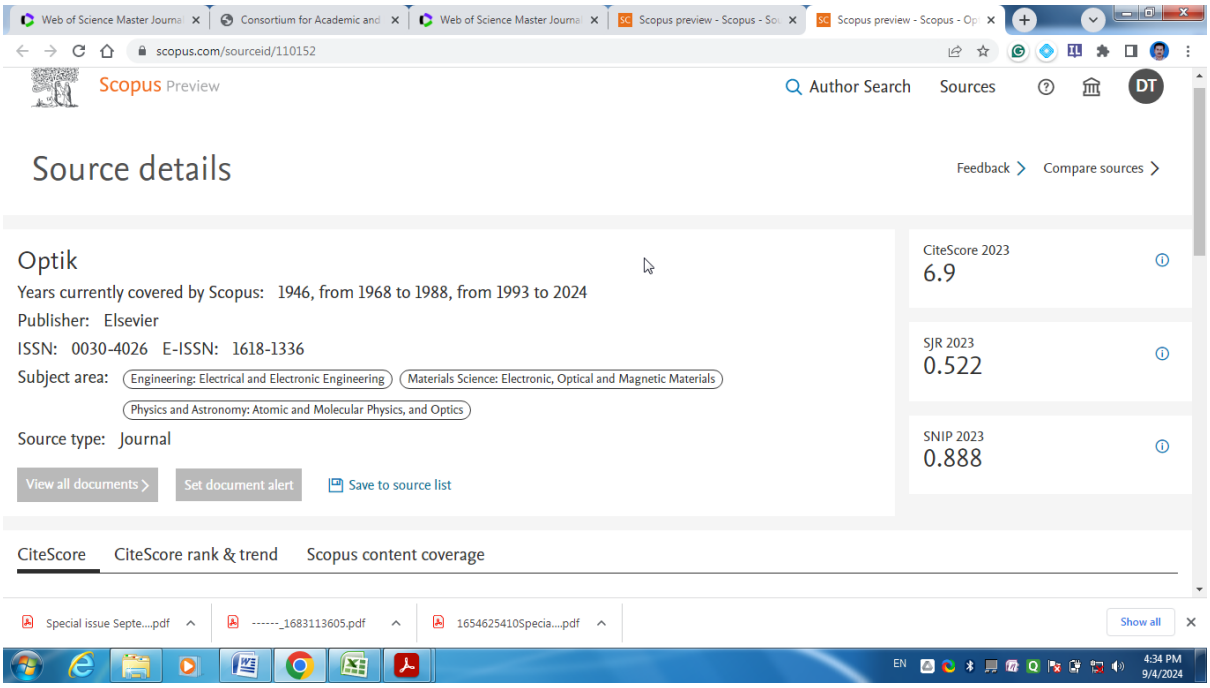

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Appendix-III

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Study of photoluminescence of Tb^{3+} doped Sr_2CeO_4 phosphor for UV LED application

D.R. Taikar

Department of Physics, Shri Lemdeo Patil Mahavidyalaya, Mandhal 441210, Nagpur, India

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ABSTRACT

Photoluminescence study of Sr_2CeO_4 and Sr_2CeO_4:Tb^{3+} phosphors were investigated. The phosphors were prepared by conventional solid state reaction method. X-ray powder diffraction analysis confirmed the formation of Sr_2CeO_4. The compound Sr_2CeO_4 exhibit broad emission spectrum having intensity maxima occur at 470 nm when excited at 290 as well as 355 nm. The Sr_2CeO_4:Tb^{3+} phosphor exhibit broad Ce^{4+}–O^{2-} charge transfer band superimposed with sharp Tb^{3+} emission peaks at 355 nm excitation. From the spectral properties, it is recognized that the prepared phosphors are useful in near UV excited LED, display devices and related applications.

Selection and Peer-review under responsibility of the scientific committee of the 11th National Conference on Solid State Chemistry and Allied Areas.

1. Introduction

Blue luminescence in the relatively simple mixed oxide Sr_2CeO_4 in the SrO-CeO_2 system was first reported by Danielson et al. [1]. In this oxide, the Ce ion has +4 oxidation state, and the 4f shell is empty. Sr_2CeO_4 compound crystallizes in the orthorhombic Pbam space group [2]. In Sr_2CeO_4, Sr^{2+} atom is bonded in 7-coordinate geometry to seven O^{2-} atoms whereas Ce^{4+} atom is bonded to six O^{2-} atoms to form edge-sharing CeO_6 octahedra. There are four longer (2.33 Å) and two shorter (2.21 Å) Ce–O bond lengths. There are two inequivalent O^{2-} sites. In the first O^{2-} site, O^{2-} is bonded to four equivalent Sr^{2+} and one Ce^{4+} atom to form a mixture of distorted edge and corner-sharing trigonal bipyramids. In the second O^{2-} site, O^{2-} is bonded in 5-coordinate geometry to three equivalent Sr^{2+} and two equivalent Ce^{4+} atoms [1]. The Sr_2CeO_4 phosphor was widely investigated over the last few years. Sr_2CeO_4 phosphor were synthesized by using different techniques such as solid state reaction, citrate-gel method, chemical co-precipitation method, spray pyloysis method, microwave assisted solvothermal method, Pehini's methods, wet chemical method, etc. [2–10]. Its luminescence was generally considered to originate from a ligand-to-metal charge transfer (LMCT) [11]. The photoluminescence (PL) properties were reported for Sr_2CeO_4 doped with Eu^{3+} [12–14], Sm^{3+} [12], Dy^{3+} [15], Yb^{3+} [16], Er^{3+} [17] and co-doped with Eu^{3+} and Tb^{3+} [18], Eu^{3+} and Dy^{3+} [19] and Eu^{3+} and Gd^{3+} [20]. The effect of temperature on downshifting property of Er^{3+} doped Sr_2CeO_4 was recently investigated by J. Ferrari et al. [21]. M. Stefanski et al. [22] reported the effect of synthesis procedure on optical properties of Sr_2CeO_4 phosphor. In this paper, luminescence study of Sr_2CeO_4 and Tb^{3+} doped Sr_2CeO_4 phosphor were investigated.

2. Experimental

2.1. Materials and method

Sr_2CeO_4 compound was synthesized by the conventional solid state reaction method. Solid state reaction does not takes place at room temperature and to occur reaction it is necessary to heat sample at higher temperature usually 1000 °C to 1500 °C. This method has certain advantages like it does not require extra chemicals and solvents in the reaction; the product does not require extensive purification to remove traces of solvent and impurities. The issue of waste disposal is not associated with this method and is cost effective also. Fig. 1 shows the schematic presentation of preparation Sr_2CeO_4. To synthesized Sr_2CeO_4 phosphor, $SrCO_3$ (of 99.5% purity, Merck Ltd.), and CeO_2 (of 99.99% purity, Indian Rare Earths Ltd.) were used as starting materials and these materials were taken in stoichiometric molar proportion of Sr:Ce as 2:1. Initially 1.715 gms of $SrCO_3$ and 1 gm of CeO_2 were thoroughly mixed, grind with in an agate mortar and pestle for 60 min to get

E-mail address: deepak_taikar@yahoo.co.in

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Hygrothermoelastic response of a finite solid circular cylinder

Navneet Kumar Lamba
Department of Mathematics, Shri Lemdeo Patil Mahavidyalaya, Nagpur, India, and
K.C. Deshmukh
Department of Mathematics, R.T.M. Nagpur University, Nagpur, India

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Abstract

Purpose – In this paper, a solid circular cylinder of finite length occupying the space $0 \leqslant r \leqslant 1$, $0 \leqslant z \leqslant h$ is considered. The purpose of this paper is to adopt a linear hygrothermal effect to analyze the unsteady state responses in a finite long solid cylinder subjected to axisymmetric hygrothermal loading $T = T_R$ and $C = C_R$ at the surface. The analytical solution of temperature, moisture and thermal stresses is obtained by using the integral transform technique. The coupling and uncoupling effects of temperature, moisture and thermal stresses are discussed for a graphite fiber-reinforced epoxy matrix composite material (T300/5208). The numerical results of transient response hygrothermoelastic field are presented graphically.

Design/methodology/approach – In the present problem, hygrothermoelastic response of a finite solid circular cylinder has been investigated by integral transform technique consisting of Laplace transform, Hankel transform and Fourier-cosine transform. The problem is investigated subjected to prescribed sources. Numerical algorithm has been developed for numerical computation.

Findings – The analytical solution of temperature, moisture and thermal stresses is obtained by using the integral transform technique. The coupling and uncoupling effects of temperature, moisture and thermal stresses are discussed for a graphite fiber-reinforced epoxy matrix composite material (T300/5208). The numerical results of transient response hygrothermoelastic field are presented graphically.

Research limitations/implications – The work presented here is mostly hypothetical in nature and totally mathematical.

Practical implications – It may be useful for composite materials, composite laminated plates in hygrothermal environment. Also it is having the applications in hygrothermal field where porous media exposed to heat and moisture. The problem investigated will be beneficial for the researcher working in the field thermoelastic diffusion and hygrothermoelastic materials.

Originality/value – Till date, the other authors did the research work on hygrothermal effect of an infinitely long cylinder without thickness. In this paper, the authors consider finite solid cylinder with finite length and discuss the hygrothermal effect within a small range. Second, the material properties are both homogenous and isotropic and are independent of both temperature and moisture.

Keywords Temperature, Moisture, Thermal stresses, Circular cylinder, Hygrothermoelasticity

Paper type Research paper

Introduction

In solids, "atoms" or molecules occupy definite equilibrium positions but in case of mechanical imperfect solids atoms and molecules migrate and diffuse from the higher concentration level to lower concentration level due to disturbance in concentration. The physical process by which atoms and molecules of a system are transported from one position to another is known as diffusion. At extremely high temperature, "atom" and molecules are pulled apart since thermal agitation becomes violent and causes disintegration of the solid. Non-uniform distribution of moisture also develops concentration gradient. Heat transfer process and transfer of moisture are fundamentally equivalent and each process depending on the physical conditions may not be treated

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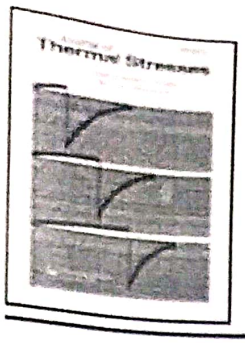

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Thermal behavior of a finite hollow cylinder in context of fractional thermoelasticity with convection boundary conditions

Navneet Kumar & D. B. Kamdi

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Thermal behavior of a finite hollow cylinder in context of fractional thermoelasticity with convection boundary conditions

Navneet Kumar[a] and D. B. Kamdi[b]

[a]Department of Mathematics, S.L.P.M. Mandhal, R.T.M. Nagpur University, Nagpur, India; [b]Department of Mathematics, R. M. G. College, Chandrapur, India

ABSTRACT

This paper presents an axisymmetric problem of two-dimensional finite hollow cylinder with the fractional order derivative of order $0 < \alpha \leq 2$ occupying the space $D = \{(x,y,z) \in R^3 : a \leq r \leq b, -h \leq z \leq h\}$. Convection boundary conditions are applied on the curved surface of cylinder and heat sources are generated as a linear function of temperature. The analytical solution for temperature, displacement, and thermal stresses are obtained applying finite Marchi-Zgrablich, finite Marchi-Fasulo, and Laplace transform technique. Some numerical results of temperature change and stress distribution are illustrated graphically and are shown in figures with the help of Mathematica software.

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Caputo fractional derivative; finite hollow cylinder; Marchi-Fasulo and Laplace transform; Marchi-Zgrablich; Mittag-Leffler function; temperature distribution; thermal stresses

Introduction

Classical theory of heat conduction begins with Fourier law in 1822, which stated the linear dependence between the heat flux vector and the temperature gradient. An equation for the strain in an elastic body was derived by Duhamel with temperature gradients. Neumann obtained the same results in year 1841. Danilovskaya [1] was the first scientist to consider the inertia effect in the study of thermoelasticity. The classical uncoupled and coupled thermoelastic theories were given by Biot [2]. Nowacki [3–5] has obtained steady-state stresses relation for axisymmetric temperature in a circular plate. Boley and Weiner [6] discussed the asymmetrically heated thermoelastic problem of plate with fixed and simply supported edge and successfully found expression for thermal deflection. Noda et al. [7, 8] analyzed inverse problem of thermoelasticity for a transient transversely isotropic body. For different physical situations, microscopic level is quite essential but this ignores during processing by the classical Fourier law. This encourages for the origination of nonclassical theories, which implies to replace the Fourier law and the parabolic heat equations by more general equations.

Povstenko [9] determined the solutions of time-fractional problem by quasi-static approach for uncoupled theory of thermoelasticity. Povstenko [10] discussed heat conduction problem with time and space fractional derivatives for the classical Fourier law generalizations. Povstenko [11] solved thermoelastic problem of infinite cylinder with time-fractional diffusion-wave equation by applying Integral transform technique and several problems with Dirichlet's and Neumann boundary conditions was simplified. Povstenko [12] used the Laplace, Hankel transform, and finite Fourier transform to determine the solutions to time-fractional non-axisymmetric diffusion-

CONTACT Navneet Kumar navvanna@rediffmail.com Department of Mathematics, S.L.P.M. Mandhal, R.T.M. Nagpur University, Nagpur 440033, India.

Shree Lemdeo Patil Mahavidyalaya MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

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RUBRIKA

Synthesis of Chromone Functionalized Chitosan Polymer: Application/Screening of Its Physical Parameters

Mahesh K. Gaidhane[a,b], Ajay M. Ghatole[c,*], and Kushal R. Lanjewar[d]

[a]Department of Chemistry, Institute of Science, Nagpur, India
[b]Department of Chemistry, Lemdeo Patil Mahavidyalaya, Mandhal, MS, India
[c]Department of Chemistry, Dhote Bandhu Science College, Gondia, MS, India
[d]Department of Chemistry, Mohsin Bhai Zawer College, Wadsa, India
*e-mail: ajay.ghatole5@gmail.com

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Abstract—Chitosan is naturally occurring, biodegradable, non-toxic, non-allergenic biopolysaccharide derived from chitin which turns viscous upon dissolution in mildly acidic medium. Artificially changed chitosan consolidating hydroxyl chromone was set up by responding 6-Hydroxy-4-oxo-4H-chromone-3-carbaldehyde with chitosan; it was found to have high specific and chelating proficiency towards transition metal ion at pH 1–8. Enhanced adsorption capacity and a strong affinity for Cu^{2+} was observed as compared to Cd^{2+}, Ni^{2+} and Co^{2+} at pH 4–6. Chitosan-hydroxyl-chromone was chemically synthesized and characterized by spectroscopic techniques. Potentiometric strategies affirmed the request of selectivity which was free of the physical form of chitosan-hydroxyl-chromone subsidiary. ^{1}H NMR outcomes recommended a level of substitution (DS) extending from 32.72 to 98.21%. Antimicrobial and antioxidant activity of chitosan-hydroxyl-chromone within the series of synthesized compounds was evaluated. To improve the solubility of chitosan in water, we present a synthesis of chitosan-based chromone biopolymers and its applications in metal extractions.

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INTRODUCTION

Chitosan attributable to the nearness of responsive surface amino group, a most favored partiality site for polar materials, its high hydrophilicity because of the substantial number of hydroxyl bunches that partake in synthetic holding [1]. Chitosan is the main normally happening cationic gum got from chitin which turns viscous upon dissolution in the somewhat acidic medium [2]. It is a naturally occurring, bio-degradable, non-harmful, non-allergenic biopolysaccharide comprising of β-(1, 4)- 2-amino-2-deoxy-D-glucopyranose units (GlcN) including little measure of *N*-acetyl-D-glucosamine (GluNAc) buildup. Its utility gets from it being optically dynamic and having a solid fondness for transition metals [3, 4]. The 8-hydroxyquinoline is one of the most versatile extractants in synergic solvent extraction and separation techniques on account of its selectivity, sensitivity and excellent chelating capacity [5]. 8-hydroxyquinolines have destinations in charge of the complexation of the metal particles through the development of a chelate ring in the fundamental nitrogen and phenolic gathering, and have been immobilized synthetically on backings, for example, Amberlite XAD-arrangement pitches [6, 7], cellulose [8–12] and silica gel [13–15] for the partition and centralization of follow metals from the ocean and lake tests.

Quinoline-based molecular clips have been reported as chemosensors for selective fluorescent detection of Zn^{2+} [16]. The greater part of the strategies for union with oxine portrayed in the writing is changes of the original techniques: the functionalization of biopolymer chitosan, utilizing the complexing specialist 8-hydroxyquinoline (oxime) by diazotization [17]. The metal complexation by chitosan and its subordinates [18] demonstrate that in spite of manufactured polymers, for example, cross-connected polystyrene, chitosan a characteristic polymer, is free from the issue of swelling attributable to its high hydrophilicity because of the expansive number of hydroxyl groups and the responsive amino group are surface groups that partake in compound holding. Chromones assume an imperative job in the digestion of the vegetation; they are involved in the oxidation-reduction system, possess anthelminthic, analgesic, bronchodilator, anticonvulsant, antihistamine, anti-tumor, cardiovascular, antiviral, antioxidant, etc. activities [19].

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PHARMACOKINETICS, DRUG-LIKENESS, MEDICINAL PROPERTIES, MOLECULAR DOCKING ANALYSIS OF SUBSTITUTED B-LACTAMS SYNTHEZIED VIA [BMIM][PF6]/[ET_3NH]$^+$[HSO_4]$^-$ CATALYZED COUPLING REACTION

[1)]Ajay M. Ghatole, [2)]Mahesh K. Gaidhane, [3)]Kushal R. Lanjewar, [1)]Kishor M. Hatzade

[1)]*Dhote Bandhu Science College (India)*
[2)]*Shri Lemdeo Patil Mahavidyalaya (India)*
[3)]*Mohsin Bhai Zawer College (India)*

Abstract. Our examination planned to synthesize the azido β-lactam under reactive ionic liquids for new synthetic organic methodologies. These endeavors may provide more clarity to the analysis in the systems of natural responses utilizing ionic liquid as response media. The Schiff base witnesses quick responses with azido acidic acid in a [bmim] [PF_6]/[Et_3NH]$^+$[HSO_4]$^-$ dissolvable framework, under mellow and unbiased response conditions to afford the corresponding azido β-lactam in high to quantitative yields. The library of substituted 3-azido-4-phenyl-1-(-phenylthiazol-2-yl) azetidin-2-one (**3a-s**) has screened antibacterial movement against clinically secluded Gram-positive bacteria, for example, *Staphylococcus aureus*, Gram-negative microbes *Escherichia coli* and *Pseudomonas aeruginosa* and for antifungal action against *Candida albicans* strains. Further, the synthesized compound has also assessed by a computational investigation by cooperation with the dynamic site of E150K from MRSA (PDB ID-4BL2). We present the new SwissADME web utensil that gives free access to a pool of quick yet reliable analytical models for physicochemical properties, pharmacokinetics, drug-likeness, and medicinal chemistry. Among them, in-house capable technique, for example, BOILED-Egg, iLOGP, and Bioavailability Radar, are readily available on the web.

Keywords: ionic liquid; azido β-lactam; MRSA; SwissADME; BOILED-egg; bioavailability radar

Introduction

In the nineteenth century, azides and azido-related compounds (Rostovtsev et al., 2002) demonstrate the enormous enthusiasm by researchers, the synthesis and reactivity of multifunctional allylic azides become a territory of dynamic research (Cardillo et al., 2005; Feldman et al., 2005; Mangelinckx et al., 2005). In the combination of natu-

Antimicrobial Activity of Anti-Mosquito Repellent Plant Chloroxylon Swietenia

Mamta S Wagh[1], Smita kharkale[2] Sandhya Moghe[3], Sarita Tiwari[3], Ashok D Gharde[4]

[1]Department of Chemistry, Kamla Nehru Mahavidyalaya, Sakkardara Square, Nagpur, Maharashtra, India
[2]Department of Chemistry, Lemdeo Patil College, Kuhi (Mandal), Maharashtra, India
[3]Department of Chemistry, Kamla Nehru Mahavidyalaya, Sakkardara Square, Nagpur, Maharashtra, India
[4]Department of Chemistry, Nutan Adarsh College, Umred, Nagpur, Maharashtra, India
mamtawagh20@gmail.com

***Abstract*—The mission to make humans less attractive to mosquitoes has fuelled decades of scientific research on mosquito behaviour and control. The search for the perfect topical insect repellent/killer continues. This analysis was conducted to review and explore the scientific information on toxicity produced by the ingredients/contents of a herbal product. In this process of systemic review the following methodology was applied. By doing a MEDLINE search with key words of selected plants, plant based insect repellents/killers pertinent articles published in journals and authentic books were reviewed. The World Wide Web and the Extension Toxicity Network database (IPCS-ITOX) were also searched for toxicology data and other pertinent information. Repellents do not all share a single mode of action and surprisingly little is known about how repellents act on their target insects. Moreover, different mosquito species may react differently to the same repellent. After analysis of available data and information on the ingredient, of the product in relation to medicinal uses, acute and chronic toxicity of the selected medicinal plants, it can be concluded that the ingredients included in the herbal product can be used as active agents against mosquitoes. If the product which contains the powder of the above said plants is applied with care and safety, it is suitable for use as a mosquito repellent/killer. *Chloroxylonswieteniaor* commonly known as East Indian Satinwood is a tropical, medium-sized deciduous tree native to southern India, Madagascar, and Sri Lanka. Most plants parts are used in traditional medicines in India. Essential oil obtained from the leaves and stems have anti-bacterial and anti-fungal properties. Dried leaves can be used for paints while crushed leaves for the treatment of wounds, snake bites, and rheumatism. Leaves and roots can be made into paste then taken internally or applied externally as relieve from headache.**

Keywords* : Mosquito repellent, Herbal, *Chloroxylonswietenia, Staphylococcus aureus

I. INTRODUCTION

Plants are able to produce a large number of small-molecular-weight compounds with very complex structures known as "secondary metabolites". Besides important for the plant itself, for the resistance against pests and diseases, attraction of pollinators and interaction with symbiotic microorganisms these secondary metabolites are of great commercial interest as industrial feedstocks, important products of societal use, and determine the colour, taste, aroma, coloration and smell. A number of plant secondary metabolites are commercially important fine chemicals, for use as drugs, dyes, flavours, fragrances and pesticides. Various disease-preventing activities of secondary metabolites are being rediscovered, such as anti-oxidative, antimetastatic-lowering properties (e.g., vinblastine, taxol), cytotoxic (colchicines) etc. Insecticides of botanical origin may serve as suitable alternative biocontrol techniques in the future [7].

According to International Union for Conservation of Nature (IUCN) version 2014 Chloroxylonswietenia is a susceptible species been categorized as endangered which requires attention with respect to its survival and reproduction. It is sluggish growing species which day by day is getting rare in most areas because of its high demand in timber. Such Vulnerable species need to be monitored and preserved. C. swietenia is a small to medium – sized tree, distributed in India, Sri Lanka and Malaysia. In India it is distributed in Andhra Pradesh, Karnataka, Madhya Pradesh, Orissa, Tamil Nadu and Kerala. It is

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Plagiarism and Library Integrity

Dilip Shankarrao Ganthale, Librarian, Shri Lemdeo Patil Mahavidyalaya, Mandhal

Abstract

Plagiarism is a growing problem at universities around the world. Several factors influence the researcher's behavior towards plagiarism. The Promotion of Academic Integrity and Prevention of Plagiarism in Universities (UGC) Regulations 2018 has been reported to promote academic integrity in universities and reduce plagiarism. However, this provision has many flaws that must be addressed in the pursuit of academic integrity. This article attempts to identify these regulatory gaps. It also seeks to address the academic community's over-reliance on plagiarism detection tools.

Key words: higher education, quoted work, PDS

Introduction

India's university regulator, the University Grants Commission (UGC), issued regulations in 2018 to promote academic integrity and prevent plagiarism in colleges. The deal came about in the face of several cases of plagiarism that were reported in the media. Several well-known Indian university rectors, institute directors and scientists have been sued for plagiarizing other research papers in their publications. These reports prompted the UGC to take concrete actions and formulate policies to address research integrity issues and challenges. The purpose of the regulation is not only to control plagiarism, but also to ensure the quality of the scholarly production of the Indian academic community.

The regulation provides that each research result is subjected to a plagiarism detection tool before being accepted for conclusion and/or publication. Unfortunately, although the guidelines have been issued to combat plagiarism, they focus on the similarity rate generated by the Plagiarism Detection Software (PDS) provided by UGC to all Indian Universities as part of their ShodhShuddhi (roughly translated as cleaning of researchers with many covers) is made available the entire process of writing research papers to clarify and refine the UGC Regulations 2018 to Promote Academic Integrity and Prevent Plagiarism in Universities2, referred to in this discussion as the UGC Regulations 2018. Article also uses the term researcher as a generic term for students pursuing academic studies, teachers and scientists.

Plagiarism: crushing the shoulders of giants

Plagiarism is a serious threat to plagiarists in science today. It has become a common way to easily gain advanced degrees, positions, and various types of academic achievement without recognizing the work of others. Often the research papers produced are not original at all, but are a complete copy of other people's work modified to circumvent professional electronic means such as plagiarism detection software (PDS). This raises the question of what motivates researchers, professors and students to resort to such blatant interference in the work of their peers.

According to various studies, several factors influence the attitude and behavior of researchers towards plagiarism.Peer pressure, gender, academic discipline, desire for a higher degree/position, demographic characteristics, personality and situational factors, etc. have all been found to influence researchers' behavior when dealing with plagiarism. Another factor affecting the Plagiarism Committee is the sponsor's attitude towards their own scientists. Colleagues' beliefs/behaviours towards

Shri Lemdeo Patil Mahavidyalaya SEAL Mandhal

Principal
Shri Lemdeo Patil Mahavidyalava
...nal, Teh-Kuhi, Dist-Nagpur

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Characterization of newly synthesized quaternary oxide of Cr-Zn-Cu-O and its application to photo anode in photovoltaic cell

P. M. Randiwe

Shri Lemdeo Patil Mahavidyalaya, Mandhal

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ABSTRACT

A new quaternary oxide, $CrZn_2Cu_3O_{6.5}$, has been synthesized using solid state reaction between corresponding oxides and characterized by chemical analysis, X- ray diffraction, and electrical conductivity. It crystallizes in a tetragonal structure with a lattice parameter *ao* = 9.722 A^0 and Co = 8.829 A^0. It is an n-type semiconductor and conducts current via different mechanism in two temperature ranges. A break is found in the plot of Log σ vs 1/T at 438 k when activation energy changes from 0.277 to 1.650 eV.

The photoelectrochemical properties are reported. The material in the form of Hydrogen annealed pellet was used as photoanode in electrochemical photovoltaic (ECPV) cell. The Flat band potential was located at -0.42V. PEC cell parameters such as Conversion Efficiency (η) and Fill Factor have been determined as 0.428% and 0.232 respectively.

Keywords: Synthesis, chemical analysis, X-ray diffraction; Electrical conductivity and Photoelectrochemical (PEC) study.

INTRODUCTION

In recent years, quaternary oxides containing transition metal(TM) ions have attained much significance because of their remarkable electrical, optical and magnetic properties. 'The oxides offer a very promising field for the investigation of new materials with specific properties susceptible to be involved in device application.

Present investigation was carried out to evaluate the performance of quaternary oxide semiconducting materials for their photo electrochemical (PEC) behavior in electrochemical photovoltaic (ECPV) cell. The development of ECPV cells has been hindered by relatively low conversion efficiency and poor stability offered by the oxides semiconducting materials.

Molybdates of Copper, Nickel and Manganese reported earlier in our laboratory by Kichambare and Kharat [1-3] showed poor solar to electrical conversion efficiency but remarkable stability when used as photoanode in ECPV cell. An exhaustive survey of the literature on quarter nary oxides indicates that the compound $CrZn_2Cu_3O_{6.5}$, have not been synthesized before. Hence, in this paper we present the synthesis and characterization of quaternary oxide and its application as photoanode in PEC cell.

EXPERIMENTAL

Preparation and identification

$CrZn_2Cu_3O_{6.5}$, was prepared by use of the constituent oxides (Economos 1955) by intimately mixing the AR grade oxides $Cr2O_3$, ZnO and CuO in the molar ratio 1: 2: 3 in acetone. The mixture was pressed into pellets 0.012 m in diameter in a hydraulic press at 2 ton/In^2 using 5% polyvinyl acetate as a binder. The pellets were first slowly heated up to 300°C for about 3 h to evaporate the binder and finally fired in air at 800 and 950°C for 20 and 55 h respectively in an electric furnace [4]. They were then furnace cooled at a rate of 1°C/min. The formation of this compound was ascertained by taking powder diffraction patterns using a Phillips diffractometer model P.W. 1700 with CuKα radiation. The formation of the compound was taken to be completed when the reacting materials in unreacted form and more than one modification of the compound were not present, indicating the existence of essentially a single phase. The XRD patterns of the compounds were indexed using standard indexing procedures.

Fabrication of PEC cell

The compound thus prepared was used in the pellets form for the fabrication of PEC cell. The surface of the electrode was mechanically polished and the silver paste was applied on one of the surface of the pellet and fired at 50 c for 1 h to

Shree Lemdeo Patil Mahavidyala MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur

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Research Article

PHOTOELECTROCHEMICAL STUDIES of $LaZn_2Cu_3O_{6.5}$ ELECTRODES

Randiwe P.M

Shri Lemdeo Patil Mahavidyalaya, Mandhal Tah.Kuhi Dist Nagpur

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ABSTRACT

Photoelcetrochemical electrodes of $LaZn_2Cu_3O_{6.5}$ were prepared by standard ceramic method. The electrode material was characterized by X-ray diffraction, electrical conductivity and diffuse reflectance spectroscopy. Its photo electrochemical properties are reported. It is a good candidate as photo anode in a photo electrochemical cell because of its 1.507 eV band gap. The flat- band potential is located at -0.35v SCE. The conversion efficiency was found to be 0.095%.

INTRODUCTION

Extensive studies have been carried out to find the most suitable semiconductor materials for photo electrochemical (PEC) conversion of solar energy for effective solar energy conversion, one of the desirable properties of semi conduction electrode is an appropriate energy band gap. In search of a photo anode material, many n-type semi conduction materials have been investigated. The ternary oxide $Lazn_2Cu_3O_{6.5}$ is an attractive candidate because of its 1.507 eV gap.

Experimental

Synthesis of $LaZn_2Cu_3O_{6.5}$

The ternary oxide LaZn2Cu3O6.5 was prepared by ceramic technique. Appropriate molar ratio mixture of fine powder of La_2O_3, ZnO and CuO f A.R. grade were mixed and ground in an agate mortar using A.R. acetone for homogeneity with appropriate particles size. The mixture thus obtained, was pressed into pellets of 1.2 cm diameter in a hydraulic press at 2 tonnes/ $(inch)^2$. These pellets were fired at 800°C and 900°C for 20 and 25 hours (8). After the firing was over, the furnace was allowed to cool slowly to room temperature at the rate of 1°C/ Minute. These pellets were again ground to fine powder and pressed to pellets and final firing was carried out at 950°C for 20 hours. Then these pellets were again crushed and used as material for photo anode.

Fabrication of PEC Cell

The f $LaZn_2Cu_3O_{6.5}$ pellets of thickness 3mm were prepared by applying a pressure 775 kg $(cm)^2$ and sintered in hydrogen atmosphere enhance its electrical conductivity. The resistance of the pellets was measured on a BPL-India millon Megohmmeter RM 160 MK III A. the resistivity was brought down from $416x10^3\Omega$ cm to 128 Ω cm. The surface of the pellets was polished. The silver paste was applied on one surface of the pellets and fired at 300°C for one hour. Good ohmic contact between copper wire and silver coated surface was made and this surface was covered by epoxy. This electrode acted as photanode.

The platinum cathode was fabricated by spot-welding of platinum wire to a platinum plate (1cm x 1 cm). The three electrode PEC cell was designed with saturated calomel electrode (SCE) (ELICO ER-70) as reference electrode. The light source was a 150 W tungsten-halogen lamp. The light illuminated through a quartz plate.

PEC measurement

In all PEC measurements, 0.1M Ce+4/Ce+3 was used as redox couple. Ammonium cereous sulphate and ammonium cerric sulphate solution were used to form the redox couple. The capacitance-voltage characteristics of the cell have been studied; measurement procedures are described [9].

Corresponding author:* **Randiwe P.M
Shri Lemdeo Patil Mahavidyalaya, Mandhal Tah.Kuhi Dist Nagpur

Shree Lemdeo Patil Mahavidyalaya MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

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DEPRESSION- INDUCED PROBLEM FOR SPORTS MAN AND THEIR REMEDIES

Dr. Avinash L Titarmare

ShriLemdeo Patil Mahavidyalaya, Mandhal, Dist. Nagpur

Email Id:-avinashltitarmare@gmail.com

सारांश (Abstract):–

आपल्या देशामध्ये वेगवेगळया पातळीवर विविध क्रीडा स्पर्धा खेळल्या जातात खेळाचा स्तर, खेळाचे महत्व व खेळाडूची मानसिक स्थिती, खेळांमध्ये लागणारे निर्णय, त्यातही अधिकाऱ्याकडून कधीकधी चुकीच्या निर्णयामुळे खेळाला मिळालेली कलाटणी अशा कोणत्याही स्थानिक, राष्ट्रीय किंवा आंतरराष्ट्रीय सांघीक व व्यक्तिगत क्रीडा स्पर्धा मध्ये एक जिकंतो तर दुसरा पराभूत होत असतो. हारल्यानंतर प्रत्येक खेळाडूमध्ये वेगवेगळया प्रकारची प्रतिक्रिया व्यक्त होत असते. काही खेळाडू राग व्यक्त करून स्वत:ला दोष देतात काही खेळाडूंचा राग एवढा अनावर होतो की विरोधी संघातील खेळाडूना अपशब्द व अर्वाच्य शब्दात टोमणे मारतात किंवा शिव्याची लाखोली वाहतातर काही खेळाडू अधिकारी, पंचांना दोष देतात तर काहींचा सामना हरल्यानंतर स्वत:च्या मनावर ताबा राहात नसल्यामुळे मैदानावर किंवा मैदानाच्या बाहेर शब्दांशब्दांनी वाद वाढून मारामारी पर्यत प्रकरण येत असते. एवढेच नव्हे काहींची मजल आत्महत्या पर्यत गेली आहे .तर काही खेळाडू एकदम सामान्य प्रतिक्रिया व्यक्त करतात कारण अशा प्रकारचा पराभव ते सहजतेने घेतात किंवा फारच कमी मनाला लावून घेतात. त्यांना पराभवामुळे फारसा फरक पडत नाही कारण हया बाबीकडे ते व्यक्तीगत रूपाने फार कमी प्रमाणात पाहतात. काही खेळाडू असेही असतात की जे हारल्यानंतरही प्रसन्नचित्त मुद्रेत दिसतात, कारण खेळत असतांना त्यांचा व्यक्तीगत प्रदर्शन फारच चांगला झालेला असतो परंतु संघ हारलेला असतो. हयामुळे त्याच्यात निराशा उत्पन्न झोली नसते. बहुतेक वेळेला तर संघ हारल्यानंतरही खेळाडू मात्र आंनदी दिसतो कारण त्याला एखादया खेळाडू मुळे बऱ्याच कालावधीपासून संघात संधी मिळत नसल्यामुळे व प्रतिस्पर्धी खेळाडूंचा चांगलाप्रदर्शन झाला नसल्यामुळे संघावर पराभवाची नामुष्की येते. सर्वाधिक स्वाभाविक प्रतिक्रिया निराशेच्या रूपातच होत असते आणि काही वेळपर्यंत तरी खेळाडूंच्या मनावर उदासिनतेची पडछाया कायम असते. परंतु एखादया स्पर्धेचे महत्व किती यावरच खेळाडूंची उदासीनता अवलंबून असते.

मुख्य शब्द **(Key word) :खेळाडू आणि नैराश्य**

प्रस्तावना(Introduction):

शिक्षण,शारीरिक शिक्षण तथा खेळ यांचा एक दुसऱ्याशी घनिष्ठ संबंध आहे कारण तिन्ही विषय हे जैविक, भौतिक, मानसिक तसेच सामाजिक व्यवहाराचे प्रतिनिधित्व करतात हया तिन्हीचा मुळ उद्देश मनुष्यातील विकास व व्यक्तिमत्वातील परिपूर्णता घडवून आणणे हा असतो. आधुनिक शिक्षण शारीरिक शिक्षण हे खेलाशिवाय अपूर्ण मानल्या गेले आहे. कारण सुदृढ शरिरातच सुदृढमन वास करित असते. तरीही व्यायाम व खेळाशिवाय सुदृढ शरिराचा विकास शक्य नाही.

गोडफ्रे थॉमसन यांच्या मतानुसार,'शिक्षण व्यक्तिवर पडणाऱ्या वातावरणाचा तो प्रवाह आहे ज्यामुळे त्याच्या विचार आणि व्यवहारातील प्रवृत्तीमध्ये बदल घडून येत असते. आजीवन चालणारी ही विद्या, व्यक्तिला प्रभावशाली रूपात भौतिक आणि सामाजिक वातावरणात व्यवस्थित होण्यासाठी संधी प्राप्त करून देते'.

शारीरिक क्रिया आणि खेळातील खेळाडूचा अभ्यास तसेच प्रतिस्पर्धी पक्षाशी संबंधीत व्यवहार प्रणालीचा अभ्यास तसेच खेळाडूंच्या मानसिक स्थितीतील श्रेष्ठतम प्रदर्शनाच्या उद्देशाने योग्य आणि आवश्यक मार्गदर्शन,शारीरिक शिक्षण खेळाच्या तुलनेत कितीतरी अधिक विस्तृत विषय आहे. क्रीडा कौशल्याशिवाय क्रीडा मानसशास्त्रावर अधिकारदिला जाणे आवश्यक आहे. खेळाडूचे मानसिक कौशल्य, मानसिक प्रशिक्षण व मानसशास्त्रीय दृष्टिनेही प्रतिस्पर्धात्मक खेळात भाग घेणाऱ्या खेळाडूंची समस्या व नंतर पराभवातून आलेले नैराष्य व नैराश्यातून निर्माण झालेली समस्या अधिक गंभीर, गुंतागुंतीची व विपम असल्याचे दिसून येते.

याच अंगाने विस्तृतपणे सांगायचे झाले तर काही खेळाडू पराभवातील दु:खातून खूप दिवसानंतर बाहेर पडतात स्पर्धा विशेष रूपाने महत्वाची आहे आणि त्यामध्ये एक विशेष स्थान असेल तर खेळाडूची प्रतिक्रियाही तेवढीच तीव्र

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

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Study of energy transfer from Bi^{3+} to Tb^{3+} in Y_2O_3 phosphor and its application for W-LED

D.R. Taikar

Department of Physics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, Nagpur, India

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ABSTRACT

Y_2O_3 activated with different activators were prepared by co-precipitation method. The prepared phosphors were characterized by XRD, SEM and photoluminescence (PL) techniques. The Tb^{3+} doped Y_2O_3 phosphor shows characteristic green emission due to $^5D_4$ to ^7F_j transitions of Tb^{3+} ion. The Bi^{3+} doped Y_2O_3 phosphor shows PL emission in blue region due to the transition between excited $^3P_1$ state and ground state $^1S_0$ of Bi^{3+} ion. The multiple systems of Tb^{3+}emission lines in Y_2O_3:Tb^{3+} and two types of excitation and emission spectra of Y_2O_3:Bi^{3+} phosphors are due to two Y^{3+} sites in the host structure with C_2 and S_6 symmetries. Due to the addition of transition metal ion Bi^{3+} in Y_2O_3:Tb^{3+} lattice, the excitation efficiency is enhanced throughout the spectral range from 300 nm to 400 nm. Bi^{3+} ions absorb N-UV radiation and, subsequently, the energy is transferred from the sensitizer Bi^{3+} to activator Tb^{3+} and emitted via $^5D_4$ to ^7F_j transitions of Tb^{3+} ion. From the spectral properties of Y_2O_3:Bi^{3+} and Y_2O_3:Tb^{3+}, Bi^{3+}, it is established that the prepared phosphors are useful in near UV excited LED (solid state lighting) application.

1. Introduction

In recent years, the white light-emitting diodes (W-LEDs) globally replaced traditional light bulb and fluorescent lamps due to their high luminous efficiency, long operation time, energy-saving, good reliability, high rendering index and environmental friendliness [1–5]. Usually, there are two methods to obtain white light, (i) blue LED chip combined with yellow phosphor such as $(Lu,Y)_3(Ga,Al)_5O_{12}$:Ce^{3+} or $Lu_3(Al,Mg)_2(Al,Si)_3O_{12}$:$Ce^{3+}$ [6–9]. Presently, W-LEDs with a blue InGaN chip in combination with a yellow phosphor (YAG:Ce^{3+}) are already commercially available [10–14], but it lacks red and green component and, respectively, its color rendering index is low. (ii) Near ultraviolet (N-UV) LED chip combined with red, green and blue phosphors [15–17]. Therefore, the development of novel red, green and blue phosphors with efficient N-UV absorption (350–400 nm) is very important for further development of light-emitting diode (LED).

The trivalent rare earth (RE^{3+}) doped inorganic phosphors has drawn much attention in the last few decades and shown their usefulness in past in luminescent devices, opto-electronic devices, display devices, as well as biochemical probes. Because of high chemical stability, high melting point (2380 °C), high refractive index (~1.8) and low phonon energy, Yttria (Y_2O_3) is a promising host among the oxide materials [18–20]. Y_2O_3-based materials doped with RE^{3+} ions (Eu^{3+}, Tb^{3+}, Pr^{3+}, Sm^{3+}, Dy^{3+}, Tm^{3+}, Ho^{3+} and Er^{3+}) were studied extensively and their application in fluorescent lamp, field emission displays (FEDs), cathode-ray tubes (CRTs) and biomedical imaging were reported [21–31]. Under the cathode ray or shorter UV wavelength excitation (less than 300 nm), these phosphors show high efficiency, superior color purity and sharp transition due to their 4f–4f transition, which are shielded by the outer 5s and 5p orbitals. However, their excitation band in the N-UV region (350–400 nm) is too narrow as well as weak and it shows very poor response because of forbidden 4f–4f transitions [32–34]. To expand the N-UV excitation band of rare earth ions, sensitization through energy transfer (ET) mechanism is a good option. Bi^{3+} has been employed as a sensitizer to transfer energy to various rare earth ions [35–42]. Bi^{3+} may also act as a sensitizer for Tb^{3+} ions [43,44] but this combination has not been studied much in Y_2O_3 crystal as per as photoluminescence are concerned. In this study, the energy transfer from Bi^{3+} to Tb^{3+} for the production of green light in Y_2O_3 host under the N-UV excitation and its application for W-LED is investigated.

E-mail address: deepak_taikar@yahoo.co.in.

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Shree Lemdeo Patil Mahavidyala MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

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Structural and Electrical Properties of Nano [Ni 0.6 Zn 0.4 Fe2 O4] Spinel Ferrite

Dr. Ramesh N. Taikar [1], Sadanand R. Sarve [2*], Disha T. Yele [3], Dr. Deepak R. Taikar [4], Kalpana R. Nagde [5]

[1]Assistant Professor, Dept. of Physics, C. J. Patel College, Tirora, Gondia, Maharashtra, India

2*Assistant Professor, Dept. of Physics, Vidya Vikas College, Samadrapur, Maharashtra, India

[3]Deptt. of Physics, C. J. Patel College, Tirora, Maharashtra, India

[4]Assistant Professor, Dept. of Physics, Shri. Lemdeo Patil Mahavidyalaya, Mandhal, Maharashtra, India

[5]Assistant Professor, Dept. of Physics, Institute of Science, Nagpur, Maharashtra, India

ABSTRACT

Nano Ni-Zn ferrite with composition $Ni_{0.6}Zn_{0.4}Fe_2O_4$ is prepared by using sol-gel auto-combustion method with citric acid as a fuel. The structural properties of synthesized nano-ferrite is characterized by powder X-ray diffraction (XRD) technique while the electrical properties have been studied using two probe method. The X-ray diffraction study confirms that, there is a formation of single-phase cubic spinel with most intense peak at [311] having lattice constant of 8.3585 A^0 and the average particle size is found to be 45.63 nm. In addition to this, the electrical resistivity of Ni-Zn Ferrite decreases with increase in temperature which exhibits semiconductor nature.

Keywords : Nano Ni-Zn ferrite, sol-gel technique, XRD, Electrical Resistivity.

I. INTRODUCTION

Ferrites have generated diverse technical interest due to their most interesting applications in electronic circuits as inductors, in high frequency systems, in power delivering devices, in magnetic recording media, transformer core, microwave absorber (1) (2). Among the various ferrites, nickel (Ni) substituted zinc (Zn) ferrites plays important role in technological application due to their high saturation magnetisation, low coercivity, high resistivity and low electric loss (3). The choice of cations and their distribution in tetrahedral 'A' and octahedral 'B' sites in a ferrite is interesting and useful for the characterisation (4). $ZnFe_2O_4$ has normal spinel structure, where Zn^{2+} ions in 'A' site and all Fe^{3+} ions are distributed in 'B' sites, whereas $NiFe_2O_4$ has inverse spinel structure in which Ni^{2+} ions mainly in 'B' sites and Fe^{3+} ions equally distributed in 'A' sites and 'B' sites. Thus, Ni-Zn ferrites forms a mixed spinel in which tetrahedral sites occupied by Zn^{2+} and Fe^{3+} and octahedral sites occupied by Ni^{2+} ions and Fe^{3+} in the lattice (5).

A wide verity work has been done on the structural, electrical and magnetic properties of Ni-Zn ferrite. Verma and Goel found that, the DC electrical resistivity of Ni-Zn ferrite greater than 108 Ω cm can be prepared by precursor method (6). The different experimental technique used for the preparation of Ni-Zn ferrite such as, sol-gel auto combustion (7), co-precipitation (8), ball milling (9), micro-emulsion (10),

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In vitro anticancer activity of thiazole based β-amino carbonyl derivatives against HCT116 and H1299 colon cancer cell lines; study of pharmacokinetics, physicochemical, medicinal properties and molecular docking analysis

Ajay Manohar Ghatole*[a,b], Mahesh Krishanarao Gaidhane[c], Kushal Radhesham Lanjewar[d] & Kishor Manohar Hatzade[b]

[a] Department of Chemistry, Gov. Institute of Science, Civil line, Nagpur 441 001, India

[b] Department of Chemistry, Dhote Bandhu Science College, Gondia 441 614, India

[c] Department of Chemistry, Shri Lemdeo Patil Mahavidyalaya, Mandal, Kuhi, India

[d] Department of Chemistry, Mohsin Bhai Zawer College, Wadsa, Desaigang, India

E-mail: ajay.ghatole5@gmail.com; kishorhatzade@gmail.com

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The present study describes the synthesis and anticancer evaluation of certain substituted rac-(2S)-2-[(R)-[(4-substitutedphenyl){[4-(4-substitutedphenyl)-1,3-thiazol-2-yl]amino}methyl]cyclohexanone derivatives. The *in vitro* anti-cancer assay indicating substituted β-amino carbonyl derivatives **4g** and **4r** are particularly active in both tests (HCT116 and H1299). The **4f, 4o,** and **4t** are the least functioning; **4m** and **4n** are marginally active; **4b** and **4c** are more cytotoxic when the growth inhibition percent is compared with standard drugs Camptothecin (CPT.), Acyclovir (ACV), Cisplatin (CDDP.), Vinblastine (VBL) and Trichothecene (TCT.). Among them, 2-((4-*p*-tosylthiazol-2-ylamino)(4-hydroxyphenyl)methyl) cyclohexanone **4u** exhibits selective cytotoxicities for IC_{50} μg/mL against HCT116 and H1299, respectively. Simulation of virtually designed 21 compounds has been studied for active binding sites of Crystal Structure of the Cancer Genomic DNA Mutator APOBEC3B (PDB ID- 5CQD) enzyme using molecular modelling of protein-ligand interactions. The in-depth sequencing studies reveal that the involvement of APOBEC3B in cancer mutagenesis. For comparison, the binding behaviour of known standard drugs has also studied. The new SwissADME web utensil that gives free access to a pool of quick yet reliable analytical models is presented for physicochemical properties, pharmacokinetics, drug-likeness, and medicinal chemistry. Among them, in-house capable technique, for example, BOILED-Egg, iLOGP, and Bioavailability Radar, are readily available on the web.

Keywords: Thiazole derivatives, HCT116, H1299, APOBEC3B (PDB ID- 5CQD), SwissADME, BOILED-Egg, bioavailability radar

The principal aim of our effort is the discovery of novel cytotoxic and anticancer agents with fewer side effects of standard drugs (Figure 1). The three main treatments of neoplastic diseases comprise surgery, radiotherapy, and chemotherapy; this last one is the most limited, with a rate value of 5-10% of total healing. There is numeral difficulty with the safety profile and efficacy of chemotherapeutic agents. The attempts to create a new drug, which can be used further in the treatment of any disease is a formidable challenge. Many failures accompany development. It is always necessary to have a lot of creativity, intelligence, and overall good team work for better results[1].

Cytotoxic primarily affects the rapidly dividing cells, so it does not target the cancer cells, which specified in the resting phase. Finally, cytotoxic are associated with a high incidence of adverse effects. The typical examples consist of bone marrow suppression, alopecia, mucositis, nausea, and vomiting. Several publications reported on Mannich ketones as potential cytotoxins[2-5].

Some Mannich bases synthesized from thiazole or its derivatives containing aromatic or heterocyclic rings. It was estimated that at least 35% of β-amino carbonyl derivatives related articles are published in pharmaceutical journals. They are known through use in polymers, resins, the surface at active agents[6], detergent additives[7] antioxidants, and diuretic[8]. They have a broad range of biological activities, including antipsychotic[9], oxytocin[10], anticonvulsant[11], centrally acting muscle relaxant[12], anticancer[13,14], antimalarial[15], antiviral[16], anti-tubercular, anti-bacterial and anti-fungal[17]. Furthermore, β-amino

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Innovational combination of hetero-bifunctional N-PEG quinoline scaffolds derivatives with improved anticancer activity against breast and colon cancer cell lines and P-glycoprotein, cytochrome p450 enzyme activity prediction

Mahesh GAIDHANE[1], Ajay GHATOLE[2,*], Kushal LANJEWAR[3], Kishor HATZADE[2]

[1]Department of Chemistry, Shri Lemdeo Patil Mahavidyalaya, RTMNU, Mandal, MS, India

[2]Department of Chemistry, Dhote Bandhu Science College, RTMNU, Gondia, MS, India

[3]Department of Chemistry, Mohsinbhai Zaweri Mahavidyalaya, Desaiganj, Wadsa, MS, India

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Abstract: Polyethylene glycol (PEG) is a polymer that is widely used as a carrier for drug delivery systems (DDS). A library of N-PEGylated quinoline derivatives of PEG molecular weight 200 was prepared rapidly after the activation of PEGs using maleic anhydride. Quinoline with a polymer backbone is essential as new material. PEG is a water-soluble nonionic polymer approved by food and drug organizations for medicine applications. Because of its nontoxic grapheme, it is widely utilized in numerous biochemical, cosmetic, pharmaceutical, and industrialized applications. The modern SwissADME is a web tool that stretches free admittance to a pool of hasty, yet solid, clarifying models for physicochemical properties, pharmacokinetics, and therapeutic science. The present facile synthetic strategy can be a practical approach for incorporating polymeric carriers conjugated with drug moieties, either in the backbone of the polymer or as a terminal and pendant group on the polymer chains.

Key words: PEGylated quinoline, breast, colon cancer, P-glycoprotein, cytochrome P450 enzyme

1. Introduction

A library of N-polyethylene glycol(PEG)ylated quinoline derivatives of PEG molecular weight 200 was prepared rapidly after the activation of PEGs using maleic anhydrides. Quinoline with a polymer backbone is essential as new material. In 1995, Zalipskyet al.[1] and Herman et al. [2] reported the functionalization of polyethylene glycol for the preparation of biologically-relevant conjugates along with some reactive end groups. Polyethylene glycol conjugation chemistry represents an emerging trend for the generation of potential therapeutic agents. Woodle et al. [3] and Allen et al. [4] have demonstrated that PEG-modified biological molecules can benefit from extended plasma lifetimes, induced by reducing the uptake by the reticuloendothelial system and more generally, from a decrease of the undesired consequences of electrostatic and van der Waals interactions. A future direction towards nonviral gene therapy is the use of PEG-grafted synthetic vectors as long-circulating carriers for receptor-mediated gene delivery [5]. PEG has been used as a solvent medium for regioselective Heck reaction with elementary recyclability of solvents [6]. The incomparable ability of PEG to be soluble in both aqueous solution and organic solvents makes it eligible for end grouping derivatization and chemical conjugation to biological molecules under insignificant physiological conditions. The PEG-modified drug has been used widely as an antitumor drug carrier because of its excellent water solubility and biocompatibility [7]. Norfloxacin, one of the fluoroquinolone antibiotics, was conjugated to mannosylated dextrin to increase the intake of the drug by cells, enabling faster access to microorganisms, [8,9]. The backbone of polyurethanes and other ordinary low-density polyethylenes with antimicrobial Norfloxacin drugs were investigated by Yang et al. [10] against several gram-positive, and gram-negative bacteria, and displayed excellent antimicrobial activities. Recent advances in tumor therapy has demonstrated that successful anticancer strategies could be developed by employing proper carrier systems able to deliver probes, drugs, or genes to tumors targets [11]. Quinoline derivatives have been widely used for their biological [12–14], antibacterial, and antimalarial actions and in addition, for their cardiovascular, antineoplastic, and receptor agonist actions [15]. PEG, a water-soluble, nonionic polymer, which has a nontoxic character, is widely used as a carrier for drug delivery systems, and in many biochemical, cosmetic, pharmaceutical, and business applications [16]. The novel facile synthesis of a family of N-PEGylated quinoline

* Correspondence: ajay.ghatole5@gmail.com

Shree Lemdeo Patil Mahavidyalaya MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

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MEDICINAL CHEMISTRY RESEARCH

ORIGINAL RESEARCH

A facile synthesis of some new pyrimidine-2,4,6-triones analogs and their *o*-β-D-glucosides P-glycoprotein and antioxidant, antimicrobial study, blood–brain barrier, cytochrome p450 enzyme activity prediction

Kishor M. Hatzade[1] · Ajay M. Ghatole[1] · Pravin K. Gaidhane[2] · Mahesh K. Gaidhane[3] · Gunwant P. Gadekar[4]

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Abstract

The condensation of several 1,3-disubstitutedpyrimidine-2,4,6(1*H*,2*H*,3*H*)-triones **2a–g** by 3-formyl-4*H*-chromen-4-one **1** has resulted in the formation of new 5-[(7-hydroxy-4-oxo-4*H*-chromen-3-yl)methylene]-1,3-disubstitutedpyrimidine-2, 4, 6 (1*H*, 2*H*, 3*H*)-triones **3a–g**. These compounds have used for the synthesis of medicinally important 5-[(7-*o*-β-D-glucopyranosyloxy-4-oxo-4*H*-chromen-3-yl)methylene]-1,3-disubstitutedpyrimidine-2,4,6(1*H*,2*H*,3*H*)-triones **6a–g** using α-acetobromoglucose (ACBG) as a glucosylating agent in the presence of dodecyltrimethylammonium bromide (DTMAB) as a phase transfer catalyst. The structures of the product have confirmed based on ^{1}H NMR, ^{13}C NMR, ES-MS, optical activity, and elemental analysis. The mixes were assessed for their in vitro biological action. Among all the incorporated exacerbates, nobody is foreseen devoured and not blood–brain barrier permeant considering the way that outside of the extent of the plot with the exclusion of the standard medication clotrimazole. By considering the medicinal chemistry assessment all the incorporated molecule violet the PAINS, Brenk, and Leadlikness except for clotrimazole. The modern SwissADME web tool that stretches free admittance to a pool of hasty yet solid clarifying models for physicochemical properties, pharmacokinetics, and therapeutic science.

Keywords α-Acetobromoglucose · Chromones · Deacetylation · Glycosylating agent · Pyrimidine-2,4,6(1*H*,2*H*,3*H*)-triones · ADME

Introduction

The synthesis of organic compounds containing pyrimidine (a keto form) has attracted a current interest in the organic synthesis because of their pharmacological activities such as sedatives and hypnotics, antitumour, antiviral, anti-inflammatory, bacteriostatic, antineoplastic, cardiovascular, antidepressant, antituberculosis, antihypertensives, hypothermic, and herbicidal activities [1–3]. In the most recent decades, carbohydrate drugs increased much consideration since they are in charge of their capacity in different biological processes [4–6] incorporating especially cellular recognition on account of resistant response [7, 8] tumor metastasis [9] inflammation [10–12], and bacterial and viral infections [4]. Often, the carbohydrate serves as a carrier of a known pharmacophore group. The carbohydrate carrier may change an aspect of absorption, distribution, metabolism, or excretion of the drugs. Remembering the above certainties and in continuation of our studies [13–17] is considered significant to incorporate hybrid molecules as new synthetic substances comprising of chromone, pyrimidine and glucose moiety [18, 19]. Herein, we account an effective synthesis of new compounds comprising pyrimidine, viz., 5-[(7-hydroxy-4-oxo-4*H*-chromen-3-yl) methylene]-1,3-disubstitutedpyrimidine-2,4,6 (1*H*, 2*H*, 3*H*)-triones **3a–g** by the interaction of 7-hydroxy-3-formyl-

✉ Ajay M. Ghatole
ajay.ghatole5@gmail.com

1 Department of Chemistry, Dhote Bandhu Science College, Gondia 441614, India

2 Department of Chemistry, GWCOET, RTMNU, Nagpur, India

3 Department of Chemistry, Shri Lemdeo Patil Mahavidyalaya, Mandal, Kuhi, India

4 Department of Zoology, Dhote Bandhu Science College, Gondia 441614, India

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Synthesis of Substituted Phenothiazines derivatives, Antioxidant, P-Glycoprotein, Cyp Enzyme Activity, HIA and BBB Prediction

Mahesh K Gaidhane[1], Ajay M Ghatole[2]*, Meghasham N Narule[3], Pravin K Gaidhane[4], Kushal R Ianjewar[5] and Gunwant P Gadekar[6]

[1]*Shri Lemdeo Patil Mahavidyalaya, Department of Chemistry, Mandhal, India*
[2]*Dhote Bandhu Science College, Department of Chemistry, Gondia*
[3]*Vidya Vikas Arts, Commerce & Science College, Samudrapur*
[4]*Govindrao Wanjari Engineering and Technology, Hudkshwar Road, Nagpur*
[5]*Mohsinbhai Zaweri Mahavidyalaya, Desaiganj, Wadsa, MS, India,*
[6]*Dhote Bandhu Science College, Department of Zoology, Gondia*

***Corresponding author:** Ajay M Ghatole, Department of Chemistry, Dhote Bandhu Science College, Gondia, India.*
E-mail: ajay.ghatole5@gmail.com

ABSTRACT

As of late, there is an enormous increment of medication safe pathogens, prompting the plan and advancement of more current antibacterial specialists. Different epic subbed phenothiazines derivatives have arranged to concentrate based on pharmacological exercises in drugs revelation. Phenothiazine derivatives subbed in the 2, 3 and 4 positions have a place with a major gathering of tricyclic aromatic combinations. They are in broad use in psychiatry as tranquillizers and neuroleptics. Because of their trademark structure, they show numerous important scientific properties. A short easy synthesis of 8- [2/-(3//, 5//- dimethyl-4//- ethoxy carbonyl pyrrolyl) hydrazine] subbed phenothiazines (5a-j) from 2-arylaminbenzal-2-(3',5'-dimethyl-4'-ethoxycarbonyl pyrrole) hydrazines (4) in the imminence of sulfur and iodine. These combinations show antibacterial and antifungal drills when contrasted and standard drug Norfloxacin and Griseofulvine against Bacterial cultures, for example, Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Proteus Vulgaris and fungal cultures, such as Aspergillus niger and Candida albicans. And also, these compounds screened for their antioxidant activity. The synthesized compounds characterized by FTIR, 1H NMR, elemental and chemical properties. The modern Swiss ADME web tool that stretches free admittance to a pool of hasty yet solid clarifying models for physicochemical properties, pharmacokinetics, and therapeutic science.

Keywords: Antioxidant active, Antifungal activity, Pyrrolyl, Phenothiazines

INTRODUCTION

We survey the proof to propose that phenothiazines claim characteristic antibacterial and efflux inhibitory properties empowering them to battle drug resistance. We likewise talk about that understanding their mode of action is basic to facilitate the structure of new phenothiazine derivatives or novel specialists for use as an antibiotic adjuvant [1]. Phenothiazine derivatives incorporate compounds described by a tricyclic aromatic ring with sulfur and nitrogen atoms and substituents in the 2 and 10 or 3 and 7 positions. Phenothiazine positions are anticholinergic derivatives substituted in the 2 and 10 known as anti-psychotropic and antihistaminic drugs. They have been studied in many fields of chemical, biological and medical research owing to their pharmacological activity [2]. Studies right now uncovered that numerous compounds, having a place with various pharmacological families, bear huge nanocarriers on antibacterial movement. Instances of such "non-antibiotics" incorporate antihistamines, for example, promethazine and fluphenazine antipsychotic compounds, for example, promazine, chlorpromazine thioridazine, trifluoperazine and triflupromazine, anti-inflammatory specialists, for example, diclofenac and even antihypertensive operators, such as methyl-DOPA and propranolol [3]. Few drugs such as orlistat, lorcaserin, qsymia, contrave, phentermine etc. have approved by Food and Drug Administration as anti-obesity agents while some others such as sibutramine and rimonabant have withdrawn due to their serious side effects [4]. Pyrroles exhibit interesting biological properties1-3. Besides, Phenothiazines are well known CNS depressant compounds and have emerged as an important area of research for the biological activities like antiparkinsonian [5], anticonvulsant [6], New job growing extraneously dynamic of phenothiazine derivatives as incidentally acting CB1 receptor threatening enemy of obesity agent [7]. Antihelmatic [8], antiviral, anti-parasitic activities [9,10]. Anti-proliferative and anti-MDR activities [11], synthetic antipsychotic drugs [12] Antitubercular, antimalarial and analgesic activities [13]. Heterocycles are the biggest class of organic compounds [14] Among them, pyrroles have a recognized situation in the chemistry of living organisms because of their nearby biogenetic association with the porphyrins, the chlorins, and the corrins. Besides, they viewed as advantaged structures by synthetic chemists on account of widespread applications in therapeutic chemistry and materials science [15]. Until this point, antipsychotic and antihistamine

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

Ultrasonic Behaviour and Molecular Relations of Dihydroformazan in DMF at Different Concentrations and in Different Percentages of DMF – Water Mixture

1Smita S. Kharkale-Bhuyar, 2Sudhir S. Bhuyar, 3Pratibha S. Agrawal
1Assistant professor, 2Assistant professor, 3Professor
1shri lemdeo patil mahavidyalaya, mandhal, kuhi, nagpur,
2seth kesarimal porwal college, kamthee, nagpur,
3lit, nagpur

Abstract - **Ultrasonic velocity and density measurement of Dihydroformazan N'(benzilidene)-3-(pyrid-4-yl) dihydroformazan (S1) in DMF – Water Mixture have been carried out in the concentration range 0.01 to 0.002 mole dm-3 and 85%, 88%, 91%, 94% and 97% DMF –water has been studied in different percentage at 100C (283K). The investigational data have been used to compute several acoustical parameters such as adiabatic compressibility (βs), apparent molar volume(ϕv), apparent molar compressibility(ϕk), intermolecular free length (Lf), specific acoustic impedance (Zs) and relative association (RA). the solute-solute and solute-solvent interaction have been present in the given solutions as well as the significance the molecular interaction in all parameters.**

keywords - **ultrasonic velocity, apparent molar compressibility, specific acoustic impedance, viscosity A and B coefficient.**

I. I.INTRODUCTION

Ion – solvation is the back bone of solution chemistry [1-2]. Ultrasonic velocity studies [3-6] in containing water and some non – aqueous electrolyte solutions have controlled to new intuitions in the solvation method. Acoustic parameters such as velocity (Us), adiabatic compressibility (βs), intermolecular free length (Lf), relative association (RA) and Specific acoustic impedance (Zs), viscous relaxation time (τ), Gibb's free energy (ΔG) apparent molar compressibility (Φk), apparent molar volume (Φv), solvation number (Sn), and internal pressure (π) are useful parameters in explicate ion – solvent interaction [7-10]. Dihydroformazan is the class of compounds which have also promote to contain antimicrobacterial activity, antimicrobial, and antiviral activities against various fungi strains virus, and bacteria. Therefore, it was promoting vital to study ,their ultrasonic and thermodynamic behaviour which may lead to some new findings in future. Ultrasonic can be feasible skilled technology for the reason that it can be used for various uses in the area comparable pharmaceutical industries, consumer industries, medical industries, and chemical industries etc [11-13]. For the ultrasonic behaviour no reports available in this area of dihydroformazan in DMF – water. In the present attempt ultrasonic behaviour of dihydroformazan at compositions of 85%, 88%, 91%, 94% and 97% DMF –water has been studied [14-16].

II.THEORIES:

Altogether analytical A-grade chemicals and solvents used were gained from Merck, India. The specific conductivity of distilled water was $1x10^{-6}$ $ohm^{-1}cm^{-1}$. Standard solutions of were ready replaced heterocyclic compound in different percentage of DMF-water mixtures. Ultrasonic speed was calculated through single crystal path interferometer (2 MHz) with an accurateness of 0.03%. The density amplitude was implemented at 283K. The apparent molar volumes (Φv) and apparent molar adiabatic compressibility ΦK of Dihydroformazan N'(benzilidene)-3-(pyrid-4-yl) dihydroformazan (S1), in solutions are determined from density (ds) and adiabatic compressibility (βs) of solution. Using following equations.

$$\Phi V = \left\{\frac{(d0-ds)X10^{3}}{m\ ds..d0}\right\} + \frac{M}{ds} \text{----------(1)}$$

II.

Where M is molecular weight of the solute, m is the molality of solution, do is the density of the solvent and ds is the density of the solution.

$$\Phi ks = \left\{\frac{(\beta sd0-\beta 0ds)\ X10^{3}}{m\ ds..d0}\right\} + \frac{\beta sM}{ds} \text{----------(2)}$$

Where βs is the adiabatic compressibility of solution and 0 its is the solvent which can be calculated by

$$\beta s = \frac{}{100}$$

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Impact of COVID-19 : A mathematical model

S. D. Warbhe *
Laxminarayan Institute of Technology
Rashtrasant Tukadoji Maharaj Nagpur University
Nagpur 440033
Maharashtra
India

N. K. Lamba †
Shri Lemdeo Patil Mahavidyalaya
Mandhal
Nagpur 441210
Maharashtra
India

K. C. Deshmukh §
Department of Mathematics
R.T.M. Nagpur University
Nagpur 440033
Maharashtra
India

Abstract

In the present scenario, the whole world struggling with COVID-19 which affects highly transmittable and pathogenic viral infection that rose by a newly discovered coronavirus and believed to be originated in China. The more serious effects of the virus occur for the people who are under medical problems as diabetes, chronic respiratory diseases, cancer, and cardiovascular diseases also in older persons. Because of the unavailability of proper vaccine, medical facility and medical experts the current situation becomes worst and uncontrollable for many countries. Hence, in order to overcome and reduce the spread of infection there is a necessity to prepare the predictive mathematical model due to prevention factor and suitability conditions. Enlightened by the coronavirus, the present study deals

*E-mail: sdwarbhe@rediffmail.com (Corresponding Author)
†E-mail: navneetkumarlamba@gmail.com
§E-mail: kcdeshmukh2000@rediffmail.com

with a novel mathematical model of COVID-19 to investigate the impact of S-I-R-M model due to the influence of prevention factor and suitability conditions. Numerical calculation for infectious rate, recovery rate and mortality rate have been discussed and displayed graphically. Moreover, some comparisons have been shown in figure to estimate the effect of prevention factor.

Subject Classification: *03C65, 92B05, 97A30.*

Keywords: *Corona virus, COVID-19, Mathematical modelling, Prevention factor.*

1. Introduction

The coronavirus cause diseases like a range of illnesses in humans including common cold and more severe life-threatening forms like SARS and MERS . The virus is known as Coronavirus because of its shape which takes the form of a crown with protrusions around it. It is believed that the recent outbreak of the Coronavirus occurred in an illegal market for wildlife in the Wuhan, China and travelled across the other continents in faster way. The infected person escalates the virus by coughing, sneezing or talking through which respiratory droplets released. Many unexplained symptoms like cough, fatigue, fever and pneumonia start reporting in early December 2019 in Chinese city Wuhan within a short time period [2, 3]. The health authority of China and World Health Organization (W.H.O.) on January 10, 2020 point out and named as coronavirus to this new form of virus [4].

Li et al. [5] studied early transmission dynamics in Wuhan, China and estimate epidemic doubling time as well as basic reproductive number. Wu et al. [6] discussed the impact of COVID-19 by considering the concept of reproductive number and examined its transmissibility. Ivorra et al. [7] studied the nature of coronavirus. Li [8] discussed the COVID-19 situation in detail. Bhola et al. [9] discussed Mathematical Model on Corona epidemic in India context. Looking into the above literature and investigations there is needed to study a mathematics based model for behaviour analysis of virus. Bhatnagar et al. [10] presented descriptive study of COVID-19 with special reference to India. Singh et al. [11] Predicted COVID-19 pandemic situation based on data related to time series by using Support Vector Machine. Sharma and Chandra [12] studied linear regression with factor analysis in fault prediction of software.

In this paper, we prepare a Mathematical model S-I-R-M, to minimize infection rate, mortality rate and to improve in the rate of recovery by using

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Time fractional heat transfer analysis in nonhomogeneous thick hollow cylinder with internal heat generation and its thermal stresses

[1]Shivcharan Thakare, [2]M S Warbhe and [3]Navneet Kumar
[1, 2]Department of Mathematics, Sarvodaya Mahavidyalaya, Sindewahi, Chandrapur, India
[3]Department of Mathematics, S.L.P.M., Mandhal RTM Nagpur University, Nagpur, India
Email: navneet19021984kumar@gmail.com

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Abstract
The present article deals with the study of a two dimensional thermoelastic problem of nonhomogeneous thick hollow cylinder within the context of fractional order derivative of order $0 < \alpha \leq 2$. In which convection boundary conditions are applied on the curved surface of cylinder with internal heat generation. The material properties other then Poisson's ratio and density are expresses by a simple power law in axial direction. Also lower and upper surface are assumed to be thermally insulated. The affect of inhomogeneity on the both thermal and mechanical behavior is determined. Numerical computations are carried out with the help of Mathematica software for both homogeneous and nonhomogeneous cylinders as well as illustrated graphically in figures.

Keywords: *Time fractional; nonhomogeneous cylinder; thermal stresses; internal heat generation.*

1. Introduction

Nonhomogeneous materials are those materials which have different non-uniform material properties. These materials are also known as heterogeneous materials, which contain a mixture of various metallic elements. Due to superior mechanical properties these materials plays significant role in design of future intelligent composites which have great applications in science and engineering. Thermoelastic deformation and stresses in the case of semi-infinite nonhomogeneous solids where rigidity modulus varies with its depth according to a power law function were successfully investigated by Kassir [5]. Thermal stress distribution for a nonhomogeneous plate where shear modulus and thermal expansions coefficient were considered as a function of z under steady state temperature condition was investigated by Hata [9]. One-dimensional transient temperature distribution in a functionally graded composed circular hollow cylinder was analyzed numerically by Awaji and Sivakumar [15]. The 2 D unsteady state thermoelastic problem of an infinite hollow functionally graded material circular cylinder with dependent properties along radial direction using Green's function approach were calculated by Kim and Noda [16]. A new modified integral transform was developed to investigate a mixed boundary value problem which involves combination of Bessel's function as a kernel by Al-Hajri and Kalla [18].

Ootao and Tanigawa [20, 25 and 37] studied various thermoelastic problems for hollow cylinder due to uniform heat supply with nonhomogeneous piecewise power law in Laplace transform domain. Sugano [10, 11 and 12] derived transient thermal stresses in a doubly connected non-homogeneous region where Young's modulus and thermal conductivity presented in radial coordinate power laws. Thermoelastic analysis subjected to partially heating on curved surface of a circular plate was investigated by Deshmukh and Khobragade [19]. Transient thermoelastic solution of functionally graded thick hollow cylinders was obtained analytically by Hosseini and Akhlaghi [24]. In [28], Solution for the temperature and thermal stresses due to circumferential loading in a hollow cylinder using integral transform was determined successfully. In [46], the analysis of thermo elastic stress due to action of thermo mechanical loading of a laminated isotropic materials cylinder done. In [47] Thermoelastic behaviour in a solid cylinder with circumferential crack was studied using theory based on C-V heat conduction. In [48], the buckling effect presented for a solid circular plate made of porous material. Temperature distribution and thermal deflection on the

*Corresponding Author

[1].D.B. KAMDI, [2].Navneet KUMAR

THERMAL BEHAVIOUR OF AN ANNULAR FIN IN CONTEXT OF FRACTIONAL THERMOELASTICITY WITH CONVECTION BOUNDARY CONDITIONS

[1].Department of Mathematics, RMG College, Chandrapur, INDIA,
[2].Department of Mathematics, RTM Nagpur University, Nagpur, INDIA

Abstract: This present paper, concerned with the study of two dimensional thermoelastic problem of an annular fin with the fractional order derivative of order $0<\alpha\leq 2$ occupying the space $D=\{(x,y,z)\in R^3 : a\leq (x^2+y^2)^{1/2}\leq b,\ 0\leq z\leq 1\}$. The zero initial condition is assumed, further $F_1(z,t)$ and $F_2(z,t)$ is the temperatures which are kept at the inner and outer circular edges of fin also $f(r,t)$ and $g(r,t)$ is the temperatures prescribed at the lower and upper surfaces. Convection boundary conditions are assumed on the surfaces of annular fin. The analytical solution for temperature distribution and thermal stresses are obtained by applying finite Marchi-Zgrablich and Laplace transform technique. The results are obtained in the form of infinite series in terms of Bessel's function. Numerical results of temperature change and stress distribution are illustrated graphically are shown in figures by considering material properties of cooper material with the help of Mathematica software.

Keywords: Caputo fractional derivative, temperature distribution, thermal Stresses, annular fin, Integral Transform, Mittag-Leffler Function

1. INTRODUCTION

Wu [8] investigated the transient thermal stresses in an annular fin by considering its base subjected to a heat flux of a decayed exponential function of time. Yu [9] determined the stress distribution in a perfectly elastic isotropic annular fin where Taylor transformation method was used to solve the nonlinear temperature field equation. Deshmukh [10] investigated the transient thermal stresses in an annular fin by applying integral transform technique, where temperature transfer condition was prescribed on the surface of annular fin and results obtained at any point of the fin. Kulkarni [12] determined thermal stresses in a thick annular disc under the steady temperature field. Ranjan [2019] investigated the thermoelastic behavior of a functionally graded material (FGM) annular fin by considering material properties to vary radially, whereas heat transfer coefficient and internal heat generation are considered to be functions of temperature. Yıldırım [2019] studied thermal stress distributions in an annular fin with rectangular profile which was made of functionally graded material (FGM), with material properties were assumed to be graded along the fin radius follows a power-law function.

During processing by the classical Fourier law ignores different physical situations microscopic level which is quite essential this encourages for the formulation of nonclassical theories. A nonclassical theory implies to replace the parabolic heat conduction equation and the Fourier law by more general equations. Povstenko [13-21] successfully developed various thermoelastic problems based on fractional order theory. Recently, Khobragade [24] calculated thermal deflection and stresses by application of fractional order theory of thermoelasticity by doing mathematical modeling of a circular disk due to partially distributed heat supply. Khobragade [25] determined the temperature distribution, displacement, stress function and thermal deflection on outer curved surface of a solid circular cylinder thermoelastic deformation in context of fractional order theory of thermoelasticity. Kumar [26] investigated the magneto-thermodynamic response by application of fractional thermoelasticity for orthotropic Solid Cylinder by using integral transform technique.

Principal
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Mandhal, Tah. Kuhi, Dist. Nagpur.

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Analysis of Nano-Scale Beam by Eigenvalue Approach in Modified Couple Stress Theory with Thermoelastic Diffusion

Rajneesh Kumar
Department of Mathematics, Kurukshetra University Kurukshetra, India
Email: rajneesh_kuk@rediffmail.com

Navneet Kumar
Research Scholar, Department of Mathematics, RTM Nagpur University, Nagpur, India
Email: navanna@rediffmail.com

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Abstract. This paper presents a nano-scale beam in modified couple stress theory with thermoelastic diffusion induced by ramp-type heating. The Euler Bernoulli beam assumption and the Laplace transform technique are used to write the basic equations in the form of vector-matrix differential equation, which is then solved by eigenvalue approach. The displacement component, lateral deflection, temperature change, mass concentration, axial stress and chemical potential of the nano-scale beam are obtained in the transformed domain. Numerical algorithm is developed for numerical computations. Numerical computed results of the resulting quantities are depicted graphically for various values of time and various values of couple stress parameter. Some particular cases are also discussed in the context of the problem.

Keywords: Nano-scale beam; Modified couple stress theory; Thermoelastic diffusion; Eigenvalue approach; Laplace transform.

1. Introduction

Classical first gradient approaches in continuum mechanics do not address the size dependency that is observed in smaller scales. Consequently, a number

माझी जन्मठेव : वाङ्मयीन महात्मता

डॉ. तीर्थराज कापगते
श्री.लेमदेव पाटील महाविद्यालय, मांढळ जि.नागपूर

देशभक्तांच्या अलोट स्वार्थत्यागावर आजचा भारत उभा आहे. भारतीय स्वातंत्र्य आंदोलनात ज्यांनी आपल्या घरावर तुळशीपत्र ठेवलं आणि आयुष्याची राखरांगोळी केली त्या सर्वच स्वातंत्र्य योद्धयांना प्रचंड यातनांमधून जावे लागले. मातृभूमीवर अलोट प्रेम करणाऱ्या स्वातंत्र्यवीर सावरकरांनीही स्वातंत्र्यासाठी अपार हालअपेष्टा भोगल्या आणि अतुलनीय त्याग केला. त्यांचे जीवन उत्तुंग होते आणि व्यक्तिमत्त्व असामान्य होते, त्यांचे वाङ्मय हे त्यांच्या अशा उत्तुंग जीवनाचे आणि असामान्य व्यक्तिमत्त्वाचे प्रकटीकण आहे. अनंत काणेकरांनी शाईने लिहिणारे लेखक आणि रक्ताने लिहिणारे लेखक असे लेखकांचे जे दोन प्रकार सांगितले आहेत. सावरकरांचे लेखन हे रक्ताने लिहिलेले लेखन आहे. त्यांच्या लेखणीत मातृभूमीच्या मुक्तीसाठी लढणाऱ्या ध्येयधुंद क्रांतिकारकाचे रक्त होते.

सावरकरांची कवी, कादंबरीकार ,नाटककार, इतिहासं लेखक , निबंधकार,आत्मकथनकार आणि वक्ता अशी विविध वाङ्मयीन रूपे होती. 'माझी जन्मठेप' हे त्यांचे महत्त्वाचे आणि प्रसिद्ध आत्मकथन आहे.

ते महाकवी होते. कमला, गोमंतक आणि महासागर ही तीन खंडकाव्य म्हणजे त्यांच्या संकल्पित महाकाव्याची उपांगे होत. 'महाकाव्य : स्वरूप व समीक्षा' या ग्रंथात डॉ. द. भि. कुलकर्णी म्हणतात की, सावरकरांना पानपत या विषयावर वीररसपूर्ण महाकाव्य लिहायचे होते. अंदमानाच्या अंधेरीत त्यांनी नी ही इच्छा अंशतः पूर्ण केली . कमला , विरहोच्छ्वास , गोमंतक आणि महासागर हे चार असंबद्ध खंड उपलब्ध आहेत. एका अपूर्ण महाकाव्याचे हे सर्ग वाचून त्यांच्या अपूर्ण पण अपूर्व अशा महाकाव्याची ची समीक्षक कल्पना करतात व महाकाव्य न लिहिलेला महाकवी असे त्यांचे वर्णन करातात.

त्यांची अत्यंत ओजस्वी कविता देशभक्तीच्या प्रत्यक्ष अनुभूतीतून निर्माण झाली आहे आणि त्यांच्या देशभक्तीबद्दल त्यांचा शत्रूदेखील अनादर दाखवू शकत नाही. सावरकरांच्या एकूणच जीवनकार्याचा अविभाज्य भाग मातृभूमी आहे य मातृभूमीच्याप्रेमासाठीच त्यांना आयुष्यभर दाहक अशा अनुभवांना सामोरं जावं लागलं. अंदमानात त्यांना हलाहल पचवावे ती दहा वर्षे. त्यानंतर कारागृहात जाच सहन केलेली तीन वर्षे य आणि पुढे चौदा वर्षांची स्थानबद्धता अशी एकूण सत्तावीस वर्षांची असह्य यातना, या यातनेत खरेतर लौकीक अर्थाने सर्वस्व हिरण्यच संपून गेले होते य पण अशा असह्य यातना

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मराठी कथेची उत्क्रांती

डॉ. तीर्थराज कापगते
मराठी विभाग प्रमुख,
श्री. लेमादेव पाटील महाविद्यालय, मांढळ, नागपूर
८६५७०४९५०७, tirtharajkapgate@gmail.com

साहित्याचे कथात्म , नाट्यात्म आणि भावकाव्यात्म असे तीन प्रमुख वर्ग कल्पिले जातात ; त्यातील गद्य कथात्म साहित्याचा स्फुट प्रकार म्हणजे कथा. कथेत घाटनामालिकेचे कथन किंवा निवेदन केले जाते. कथा हा गद्य कथात्म साहित्याचा स्फुट प्रकार आहे. तो एक निखळ सर्जनशील साहित्यप्रकार आहे.

कथेचा अवकाश मर्यादित असतो ; पण त्या इवल्याशा अवकाशातही अनुभूतीचे अतिइवले केंद्र असते. ज्यात लेखकाचा जीवनानुभव साठवला जातो. अणुच्या केंद्रकातील सुप्त ऊर्जेप्रमाणे तो एकात्म व उत्कट असतो. त्या अनुभवाच्या स्पंदनातून उत्तम कथा आकारास येते. त्या स्पंदनात जीवनाच्या एखाद्या पैलूवर प्रकाश टाकून त्याचे दर्शन घडवले जाते ; पण त्यासोबतच सभोवतालचे राजकीय , सामाजिक पर्यावरणाचे संदर्भ टिपण्याचे व मानवी जीवनातील चिरंतनाचा शोध घेण्याचे अचाट सामर्थ्य असते. अशा उत्तमोत्तम कथांनी मराठी कथाविश्व समृद्ध झाले आहे.

आधुनिक कथेचा उगम

आधुनिक कथा एकोणीसाव्या शतकाच्या पूर्वार्धात अस्तित्वात आली. अमेरिकेतील एडगर ॲलन पो या लेखकाने १८४२ मध्ये कथेच्या स्वरूपाची प्रथम चर्चा केली. त्याच्या विवेचनानुसार, कथा म्हणजे गद्य गोष्ट , ज्यात मोजकी पात्रे , प्रसंग , वातावरणादी घटक या सर्वांच्या चिरेबंद अशा जुळणीतून कथा आकाराला येते व वाचकाच्या मनावर एकच एक संस्कार ती घडवीत असते. पुढे हेमदार मॅथ्यूज यांनी ' द फिलोसाओफी ऑफ दी शोर्ट स्टोरी ' या १९०१ साली लिहिलेल्या निबंधात पो च्या तत्त्वांचा पाठपुरावा केला. अशाप्रकारे आधुनिक कथा ' लघुकथा' या नावाने संबोधली गेली.

मराठी कथा : अभिरुचीचा विकासक्रम

लोककथा ही मराठी कथेची गंगोत्री होय. आपल्या मौखिक परंपरेत ती प्राचीन काळापासून अस्तित्वात होती. भारतात कथाकथनाची दीर्घकालीन परंपरा आहे, पण तिचे सादरीकरण मुख्यत: गायनाच्या स्वरूपात होत असे. त्यातील पद्याचे रुपांतर हळूहळू गद्यात झाले ; मात्र गोष्ट सांगण्याची मूळ प्रवृत्ती या कायम राहिली. कहाणी, नीतिकथा इत्यादी प्रकार ही कथेची मैखिक परंपरेतील रूपे होत. या कथेचे प्रयोजन रंजनवादी होते.

पुढे कहाणीची गोष्ट , गोष्टीची लघुकथा, लाघुकाठेतून नवकथा अशा क्रमाने कथा हा साहित्यप्रकार विकसित होत गेला. काळानुरूप कोणत्याही साहित्यप्रकाराचे रूप बदलत जाते. ते कथेच्याही बाबतीत घडले. कथन आणि कथनरूप या दोन्ही अर्थांनी वापरलेल्या या कथावाङ्मयाने मराठीत निरनिराळी रूपे धारण केली ; तोच तिचा उत्क्रांतीप्रवास. एकेका कालखंडातील वाचकप्रिय नियतकालिकांच्या आश्रयाने मराठी कथा वाचकाच्या मनात रुजली आणि वाढली तोच तिचा विकासक्रम. तिच्या उत्क्रांतीतील या विकासक्रमानुसारच वाचकांची अभिरुचीही घडत गेली. कथेने धारण केलेल्या रूपांचा व विशेषांचा अभ्यास तिच्या उत्क्रांतीच्या या अभ्यासात अभिप्रेत आहे. कथेच्या विविध अवस्था म्हणजे मराठी वाचकांच्या सामूहिक अभिरुचीचाही विकासक्रम होय.

Shri Lemdeo Patil Mahavidyalaya MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Umred, Dist. Nagpur.

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ग्रेस यांच्या ललितबंधांची पृथगात्मता

डॉ. तीर्थराज कापगते
श्री. लेमादेव पाटील महाविद्यालय, मांढळ, जि. नागपूर

सारांश:

मराठी कवितेत पृथगात्म व वैशिष्ट्यपूर्ण स्थान निर्माण करणाऱ्या ग्रेस यांच्या प्रतिभेने कवितेसोबतत गद्यातही आपले स्थान कायम ठेवले. ग्रेसच्या वांड्.मयीन व्यक्तिमत्त्वाचे दुसरे महत्त्वाचे अंग म्हणजे त्यांचे ललितगद्यलेखन. १९७० पासून सुरू झालेले हे लेखन आयुष्याच्या अंतापर्यंत म्हणजे २०१२ पर्यंत सुरू राहिले. 'वाऱ्याने हलते रान' या त्यांच्या पुस्तकाला पुरस्कार देऊन सोहत्य अकादमीने त्यांचा सन्मान केला तो त्यांच्या ललितगद्य लिखिनासाठीच. मराठी समीक्षेने त्यांच्या एकूणच निर्मितीवर दुर्बोधतेचा शिक्का मारला आणि त्या आरोपाचे त्यांनी निराकरण न करता ते शेवटपर्यंत लिहीत राहिले. आणि त्यांच्या चाहत्यांच्या मनात असलेले त्यांच्या विषयीची विलक्षण क्रेझ त्यांच्या मृत्युनंतरही कायम राहिली.

विपुल ललितबंध लेखन:

सुमारे साडेसाहाशे कविता ग्रेस यांनी लिहिल्या. त्या पाच काव्यसंग्रहात समाविष्ट आहेत. त्यांच्या मृत्युनंतर त्यांचा बाई! जोगिया पुरूष हा सहावा काव्यसंग्रह प्रकाशित झाला. कविते प्रमाणेच त्यांचे गद्यलेखनही विपुल आहे. सुमारे पंधराशे पृष्टे भरतील एवढा मजकूर साधारणत: अडीचशे लेखांमधून त्यांच्या चर्चबेल (१९७४), मितवा (१९८७), संध्यामग्न पुरूषाची लक्षणे (२०००), मृगजळाचे बांधकाम (२००३), कावळे उडाले स्वामी (२०१०), वाऱ्याने हलते रान (२००८) ओल्या वेळूची बासरी (२०१२) अशा सहा संग्रहातून शब्दबद्ध झाले आहे. विशेष म्हणजे दैनिक तरूण भारतच्या साप्ताहिक पुरवणीच्या स्तंभलेखनाद्वारे ग्रेस लिहू लागले. आणि त्यांच्या ललितबंधाचा जन्म झाला. त्यामुळे ते उत्स्फूर्त आहे. चर्चबेल व मितवा तरूण भारतमधून आणि पुढे संध्यामग्न पुरूषाची लक्षणे, मृगजळाचे बांधकाम, कावळे उडाले स्वामी, वाऱ्याने हलते रान हे लेखन दैनिक सामनाच्या उत्सव या

Principal
Shri Lemdeo Patil Mahavidyalaya
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सुरेश भटांच्या नंतरची मराठी गझल

डॉ. तीर्थराज कापगते
श्री. लेमदेव पाटील महाविद्यालय, मांढळ

१९६० नंतरच्या कालखंडातील मराठी कवितेत आपला वेगळा रंग जपणाऱ्या कविवर्य सुरेश भटांनी गझल या काव्यप्रकाराचा निष्ठापूर्वक स्वीकार केला. त्यांच्याच शब्दांत सांगायचे तर -

तशी जागा निवाऱ्याला कुठे माझ्या घरी होती ?
पथारी टाकण्यासाठी जगाची ओसरी होती
अरे, ह्या जिंदगानीची कधी मी काळजी केली
मला सांभाळण्यासाठी मराठी वैखरी होती

त्यांच्या प्रत्यक्ष जगण्यातून आणि कलंदर व बंधमुक्त जीवनशैलीतून अतिशय प्रभावी शब्दसामर्थ्याने मराठी गझल निर्माण. गझलेची फार्सी व उर्दू वैशिष्ट्ये त्यांनी आत्मसात करून मराठीत सर्वोत्कृष्ट गझला लिहिल्या. खूप आतला सूर लावून ह्या गझला अंत:स्फूर्तीने आळवल्या. केवळ त्यांच्यामुळेच त्या रचनाबंधाला मराठीत अत्यंत प्रतिष्ठा मिळून तो प्रकार लोकपप्रिय झाला. संपूर्ण महाराष्ट्र पालथा घालत त्यांनी तिचा दृढतेने प्रचार केला. भटांच्या प्रभावाने बघता बघता अनेक कवी त्यांच्याकडून गजलशास्त्राचे धडे घेऊन उत्तम गजला रचू लागले. महाराष्ट्रात गझल लिहिणाऱ्यांची संख्या तीनशेच्या वर असावी. आज तो मराठीतील एक महत्त्वाचा व लोकप्रिय काव्यप्रकार मानला जातो. भट यांच्या काळात आणि त्यानंतरही लिहीत राहिलेल्या महत्त्वाच्या गझलकारांच्या गझलांची तपासणी करून तिच्या वाटचालीचा व गुणवत्तेचा शोध घेत काही निरीक्षणे प्रस्तुत शोधनिबंधात नोंदविली आहेत.

गझलेचा फारशी ते मराठी प्रवास

इराणमध्ये दहाव्या शतकात पर्शियन भाषेत गझलेचा जन्म झाला. मुळात गझल हे नाव घझील् या अरबी धातूपासून तयार झाले आहे ;आणि ते स्त्रीलिंगी असून त्याचा अर्थ प्रेमालाप करणे असा आहे. पुढे त्यात राजकारण, समाजकारण, समाजस्थिती, देशस्थिती, देवधर्म, तत्त्वज्ञान.

असे विषयवैचित्र्य आले. अरबी भाषेत गझल हा काव्यप्रकार आढळत नाही, असे उर्दूचे अभ्यासक डॉ. सुरेशचंद्र नाडकर्णी म्हणतात. घझील् , घझल, गज़ल, गज्जल असा शब्दप्रवास करत फार्सीतून उर्दूत, उर्दूतून हिंदीत आणि इतर भारतीय भाषांमध्ये व पुढे मराठीत हा काव्यप्रकार आला व रूजला.

मुस्लीम शासकांच्या आगमनामुळे आलेल्या सुफी संतांसोबत प्रार्थनेच्या स्वरूपात गझल प्रथम भारतात आली. भारतात 'मोईनुद्दीन चिश्ती' या सुफी संताने फार्सी भाषेत बाराव्या शतकात पहिल्यांदा गझल लहिली. नंतर तुघलक साम्राज्याचा राजकवी आणि अल्लाउद्दीन खिलजीच्या दरबारातील अधिकारी अमीर खुसरोमुळे तिला चालना मिळाली. मोगल बादशहांच्या राजाश्रयाने ती वाढली. पुढे मुस्लीम पातशाह्यांमध्ये सतराव्या शतकापर्यंत 'उर्दू' ही बोलीभाषेच्या स्वरूपात पुढे आली. अशा पातशाह्यांपैकी निजामशहाच्या दरबारातील 'वली दकनी' हा उर्दूचा पहिला कवी मानला जातो. अठराव्या व एकोणीसाव्या शतकात मीर, जफर, जौक, गालिब (मिर्जा

Shree Lemdeo Patil Mahavidyalaya MANDHAL

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Mandhal, Tah. Kuhi, Dist. Nagpur.

साहित्य, कला आणि लोकसंस्कृतीला वाहिलेले त्रैमासिक

तिफण

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• संपादक •
डॉ. शिवाजी हुसे
पत्ता : संपादक, तिफण, 'शिवार', श्रीराम कॉलनी,
हिवरखेडा रोड, कन्नड, जि. औरंगाबाद - ४३११०
मो. ९४०४०००३९८.

डॉ– बाबासाहेब आंबेडकर यांचे फाळणीविषयक विचार

डॉ. तीर्थराज कापगते.

पहिल्या आणि दुसऱ्या महायुद्धातील नरसंहाराइतकीच प्रक्षोभक आणि वेदनादायक घटना म्हणजे १९४७ मध्ये आलेली भारताची फाळणी. भारत–पाकिस्तान फाळणीतील धार्मिक दंगलीमध्ये लाखो लोकांचे बळी जात होते. सहस्त्रावधी स्त्रियांची अब्रू जात होती आणि कोट्यवधी लोक बेघर झाले होते. महिलांवरील लैंगिक अत्याचारांनी तर क्रौर्याची परिसीमा गाठली होती. दुसऱ्या महायुद्धापाठोपाठ घडलेली फाळणीची ही घटना इतकी दूरगामी ठरली की, आजही स्वतंत्र भारत त्या घटनेचे दाहक चटके अनुभवत आहे.

[illegible] संबंध नसणारे अपक्ष आणि त्रयस्थ विचारवंतही होते. या विचारवंताचे फाळणीविषयक दृष्टिकोन या घटनेनंतर लिहिलेल्या विविध ग्रंथांमधून प्रकट झाले आहेत. या विचारवंतांमध्ये एक अग्रणी नाव आहे डॉ बाबासाहेब आंबेडकर. प्रस्तुत शोधनिबंधामध्ये त्याच्या फाळणीविषयक विचारांचा मागोवा घेतला आहे.

फाळणी आणि डॉ.बाबासाहेब आंबेडकर

डॉ.बाबासाहेब आंबेडकर हे केवळ संदर्भसाधनांच्याद्वारे अभ्यास करणारे अभ्यासक नव्हते. साधनसामग्रीचा नव्याने अन्वयार्थ लावणारे केवळ संशोधिकचं नव्हते, तर सत्याचा शोध घेणारे ते एक श्रेष्ठ दर्जाचे विचारवंत होतेय म्हणूनच त्यांच्या फाळणीविषयक विचारांमध्ये स्वतःची एक स्पष्ट भूमिका आहे. म्हणूनच अभ्यासकांना त्यांच्या मताची आजही दाखल घ्यावी लागते. फाळणीचे परिणाम 1947, 48 व 49 या तीन वर्षांत दिसले झाले. पण फाळणीच्या तीव्र आंदोलनाला 1945 मध्येच सुरवात झाली. डॉ. आंबेडकरांचा इंग्रजीतील 'थॉट्स ऑन पाकिस्तान'

हा इंग्रजीतील ग्रंथ 1940 मध्ये आणि ' पाकिस्तान ऑर द पार्टीशन ऑफ इंडिया ' हा ग्रंथ 1945 ' पाकिस्तानसंबंधी विचार ' या ग्रंथाचीच दुसरी आवृत्ती म्हणजे ' पाकिस्तान अथवा भारताची फाळणी ' हा ग्रंथ. या ग्रंथात आधी चार विभाग होते दुसऱ्या आवृत्तीत त्यांनी पाचव्या विभागाची भर घातली. फाळणी अटळ आहे अशी परिस्थिती 1946 पर्यंत निर्माण झाली तेव्हा लोकसंख्येचे स्थलांतर , स्थलांतर करणाऱ्यांना त्यांच्या मालमत्तेचा मोबदला , सीमारेषांची [illegible] शासकीय मालमत्तेची विभागणी या सर्व मुद्यांचे विवेचन त्यांना या आवृत्तीत करावे लागले. [illegible] पाकिस्तान निर्मितीच्या मर्यादांचाही विचार करावा लागला. दुसऱ्या आवृत्तीत त्यांनी भारत [illegible] एक आहे हे समजावून [illegible]

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DIGITAL LIBRARIES AND THEIR IMPACT ON TRADITIONAL LIBRARIES

Dilip S. Ganthale
Shri. Lemdeo Patil Mahavidyalay, Mandhal
Tah- Kuhi,Dist- Nagpur
Email id dilipganthale @yahoo.in

Abstract:

The rise of digital libraries has transformed information management and dissemination, challenging traditional libraries' role as primary repositories. This paper examines the impact of digital libraries on access, user engagement, resource management, and operational efficiency. Digital libraries offer enhanced accessibility, democratizing information, but also present challenges like financial investments, maintenance, and staff training. Traditional libraries are adopting hybrid models, collaborative ventures, and physical spaces to support digital learning. The research highlights the benefits of digital libraries, but also addresses concerns like digital divide, data security, and cultural heritage preservation. The paper suggests that coexistence and collaboration between digital and traditional libraries are crucial for the library ecosystem's holistic development.

Keywords: *Digital Librarie, Traditional Libraries, Information Management, Resource Accessibility, User Engagement*

Introduction:

The arrival of the digital age has brought about revolutionary shifts in a number of fields, including information management and education. One of the most significant developments in this context is the rise of digital libraries. Defined as collections of digital content, often accessible through the internet, digital libraries have emerged as powerful tools for information storage, retrieval, and dissemination. This research paper explores the impact of digital libraries on traditional libraries, examining how the digital revolution has reshaped the landscape of library services and user experiences.

Traditional libraries have long been cornerstones of knowledge, serving as repositories of physical books, journals, and other resources. They have provided spaces for learning, research, and community engagement. However, the limitations of physical space, accessibility, and resource management have posed challenges in meeting the growing and diverse needs of users. Digital libraries offer solutions to many of these challenges by providing vast, easily accessible collections that transcend geographical and physical constraints.

The transition from traditional to digital libraries involves more than just a shift in the medium of content delivery. It encompasses changes in the way information is curated, accessed, and utilized. Digital libraries offer advantages such as 24/7 accessibility, interactive

Shri Lemdeo Patil Mahavidyalaya SEAL Mandhal

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuhi, Dist-Nagpur

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SWAYAM COURSES FOR LIS PROFESSIONALS

Dilip Ganthale
Lemdeo Patil College, Mandhal. Distt. Nagpur

Abstract : SWAYAM is emerging learning opportunity for students/researcher and faculties *in higher education.the paper discusses about swayam, special features, national Co-ordinator of swayam and learning path,course subjectsand different swayam courses in Library and information science.*

Keywords : Swayam, Swayam Courses, LIS Professionals,E- Learning, Online Education, MOOC

1. Introduction

In the present era, online learning become one of most demanded format of learning among users due to its fruitful benefits such as anywhere and anytime learning through internet connectivity and a electronic devise only. Globally, the new concept of E- learning through various online courses like swayam is set to redefine the concept of higher education. These developments in education will change the learning orientation of students, faculty, institute and library. Similarly, this new environments of participatory and transformative learning offer the potential for LIS professionals to test emerging technologies, experiment and play with new roles, and self-select teams

2. SWAYAM

The full form of SWAYAM or Study Webs of Active Learning for Young Aspiring Minds. Swayam is India's national Massive Open Online Courses (MOOC) platform is developed by Ministry of Human Resource Development (MHRD) and National Programme on Technology Enhanced Learning(NPTEL), IIT Madras with the help of Google Inc. and Persistent Systems Ltd. It is capable of hosting 2150 courses taught by 1300 instructors from over 135 indian universities. And cover learning : covering school, under-graduate, post-graduate, engineering, law and other professional courses.

Swayam enables Teachers includes professors and faculties of centrally funded institutions like Indian Institute of Technologys(IITs), Indian Institute of Managements (IIMs), Central University Of Haryana which offer online courses to Indian Citizens. . Swayam is free online education was developed by Ministry of Human Resources and Development(MHRD), Govt. of India and All India Council of Technical Education(AICTE) with the help of Bill Gate's Microsoft. It offers hundreds of courses with transferable credits.[2] The all courses are offered free of cost under this programme, however nominal fees are levied in case the learner requires a certificate.

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Short note

Luminescence studies of $CaLa_4Si_3O_{13}$ doped with Er^{3+} ions

Vijay Singh [a,*], Deepak Taikar [b], S.J. Dhoble [c]

[a] Department of Chemical Engineering, Konkuk University, Seoul 05029, Republic of Korea
[b] Department of Physics, Shri Lemdeo Patil Mahavidyalaya, Mandhal 441210, India
[c] Department of Physics, R.T.M. Nagpur University, Nagpur 440033, India

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ABSTRACT

A series of Er^{3+}-doped $CaLa_4Si_3O_{13}$ phosphors with varying doping concentration ($x = 0.005 \leq x \leq 0.09$) was synthesized via sol-gel technique. The formation of $CaLa_4Si_3O_{13}$ was confirmed by XRD analysis. The prepared phosphor was further characterized by FT-IR spectroscopy, UV–visible diffuse reflectance, and photoluminescence (PL) investigations. The PL study revealed that the prepared phosphors exhibit efficient green emission at 549 nm, when excited at 379 nm excitation wavelength. The CIE chromaticity study demonstrated the capability for fine color tuning in the green region by varying the Er^{3+} doping concentration. The PL study indicated that the prepared phosphors are suitable for use in near UV excited LEDs, display appliances and correlated applications.

1. Introduction

Recently, mercury-free w-LEDs have emerged as an eco-friendly, long lasting, and efficient light source. They are widely and rapidly replacing traditional light sources such as incandescent bulbs [1–8]. There are two ways to produce w-LEDs. The first uses blue light emitting InGaN chip with yellow light emitting phosphor, which effectively excites via the InGaN chip [9–13]. But such w-LEDs suffer problems like low color rendering index because of the absence of any red component. The second uses a combination of n-UV LED chip and n-UV excitable blue, green, and red-light emitting phosphors. This second method provides better color uniformity, good color rendering index, and superior quality of light, which has necessitated the development of new efficient blue, green, and red-light emitting phosphors [14].

In the past few years, silicate-based phosphors have been widely investigated on account of their variety of structure, high thermal-chemical and physical stability, visible light transparency, and facile preparation process [15–19]. Lee et al. [20] reported a photoluminescence (PL) study of Eu^{2+}-doped bredigite structured $Ca_{14}Mg_2(SiO_4)_8$ phosphors for w-LED application and found that the phosphor shows efficient absorption from near-UV (n-UV) to blue region of the spectrum. Humayoun et al. [21] used the new cellulose assisted liquid phase precursor method to synthesized green light emitting Eu^{2+}-doped $(Ba,Sr)SiO_4$ phosphor which shows potential use in LEDs. Blue light emitting silicate-based phosphor synthesized in reduced atmosphere via conventional solid state reaction route shows efficient luminescence properties for w-LED application were also investigated by Feng et al. [22]. Eu^{3+}-doped $MgY_4Si_3O_{13}$ silicate-based phosphor prepared by solid state reaction shows emission in the orange-red region and its spectral property indicates a potential application to w-LEDs [23]. Brgoch et al. [24] develop blue-green light emitting n-UV excitable Ce^{3+}-doped $Ba_9Y_2Si_6O_{24}$ phosphor which shows a potential application for solid state lighting. Highly efficient nanocrystalline and micorocrystalline

* Corresponding author.
E-mail address: vijayjiin2006@yahoo.com (V. Singh).

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Shree Lemdeo Patil Mahavidyala MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

RESEARCH ARTICLE

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Synthesis and Luminescence Study of n-UV Excitable Tm^{3+}-Activated Blue Phosphor

Deepak R. Taikar,* Ramesh N. Taikar, Kalpana R. Nagde, and Sadanand R. Sarve

Tm^{3+}-doped La_2O_3 phosphors with different doping concentration are prepared by co-precipitation method. The prepared phosphor is characterized by X-ray powder diffraction (XRD), SEM, Fourier transform infrared (FT-IR) spectroscopy, and photoluminescence (PL) techniques. The XRD analysis confirms the formation of La_2O_3. PL measurement shows that the phosphor exhibit characteristic Tm^{3+} bright blue emission attributed to transition from $^1D_2 \rightarrow {}^3F_4$ of Tm^{3+} ions, at 363 nm excitation. The Commission International de l'Eclairage (CIE) chromaticity color coordinates of prepared phosphor is calculated and presented. The excitation peak located at 363 nm matches with the emission wavelength of near UV-LED chip, this indicates that the prepared phosphor is a promising blue light-emitting candidate for eco-friendly solid state lighting (W-LED) application.

1. Introduction

Luminescent materials are commonly called phosphors and have been widely used in lighting and display related devices such as fluorescent lamps, light-emitting diodes (LEDs), field emission displays (FEDs), plasma display panels (PDPs), cathode ray tubes (CRTs), etc.[1–5] Nowadays, there is a growing demand for new phosphors in the industries to improve the performance of lighting or display devices, and therefore the development of new luminescent materials is the need of the hour. The researchers are working hard to improve the luminescence efficiency of the phosphors and the quality of light emission by the phosphors. For this, researchers continuously exploring new kind of materials as there is still a possibility for improvement. The rare earth (RE)-based oxide phosphors have been found more suitable for these applications due to their high structural, optical, thermal, electrical, chemical, and magnetic stability.[6–8] The RE ions play a very significant role in the development of efficient phosphors. RE-based oxide materials doped with a variety of trivalent RE ions were studied extensively and their application in LEDs, CRTs, fluorescent lamps, FEDs, and biomedical imaging were reported. The RE ions show sharp, narrow, and efficient emission due to their unique 4f-4f transitions, which are shielded by the outer 5s and 5p orbitals.[9–13] Among all RE oxides, lanthanum oxide (La_2O_3) is being an excellent host lattice for luminescent studies; because it has high chemical stability, high melting point (2315 °C), lowest lattice energy, very high dielectric constant, high excitation efficiency, long luminescence lifetime, largest band gap of the RE oxide, low toxicity, lower cost compared to other RE oxides.[14–16] Jaffar et al.[8] synthesized Bi^{3+}-doped La_2O_3 phosphor via sol-gel combustion technique and the prepared sample was annealed at different temperature. It has been reported that the grain size increases with increasing annealing temperature, and the shape of the grains also changed with temperature. Ajmal et al.[15] reported the synthesis of Ce^{3+}-doped La_2O_3 phosphor, and the effect of different Ce^{3+} concentration on their structural and optical properties were investigated. Mendez et al.[16] synthesized nanocrystalline red light-emitting Eu^{3+}-doped La_2O_3 phosphor via sol–gel Pechini method and studied its photoluminescence (PL) and cathodoluminescence property.

In this paper, the synthesis of La_2O_3:Tm^{3+} phosphor, its X-ray diffraction (XRD), crystal structure, SEM, Fourier transform infrared (FT-IR), PL, and Commission International de l'Eclairage (CIE) studies were discussed in detail.

D. R. Taikar
Department of Physics
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Nagpur, India
E-mail: deepak_taikar@yahoo.co.in
R. N. Taikar
Department of Physics
C. J. Patel College
Tirora, India
K. R. Nagde
Department of Physics
Institute of Science
Nagpur, India
S. R. Sarve
Department of Physics
Vidya Vikas College
Samudrapur, India

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2. Result and Discussion

2.1. XRD Patterns, Crystal Structure, and Particle Size Analysis

Figure 1A shows the XRD patterns of La_2O_3, annealed in air at 1000 °C. The sharp and single diffraction peaks of the XRD pattern confirm the formation of a crystalline compound. The peaks are compared with the major lines in the ICDD data file 83-1345 and an excellent match is seen. It indicates that La_2O_3 has

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Hygrothermoelastic response of a finite hollow circular cylinder

N. K. Lamba & K. C. Deshmukh

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Principal
Shri Lemdeo Patil Mahavidyalaya
Tah. Kuhi, Dist. Nagpur

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Hygrothermoelastic response of a finite hollow circular cylinder

N. K. Lamba[a] and K. C. Deshmukh[b]

[a]Department of Mathematics, S.L.P.M., Mandhal, R.T.M. Nagpur University, Nagpur, India; [b]Department of Mathematics, R.T.M. Nagpur University, Nagpur, India

ABSTRACT

In this paper, a hollow circular cylinder of finite length with finite extent occupying the space $D: a \le r \le b, 0 \le z \le h$ is considered. Based on the hygrothermoelasticity theory, the transient response of a hollow circular cylinder subjected to the hygrothermal loading at the surface is analyzed. The analytical solution for the coupling and uncoupling effects of temperature, moisture, and thermal stresses is obtained by using the integral transform technique. The numerical results of the transient response of the hygrothermoelasticity field are presented graphically for a graphite fiber–reinforced epoxy matrix composite material (T300/5208).

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KEYWORDS
Hygrothermoelasticity; hollow circular cylinder; temperature; moisture; thermal stresses; integral transform technique

Introduction

Hygrothermoelastic study is concerned with the moisture and temperature coupling effects, which significantly affect the mechanical properties of materials and hygrothermal stresses induced in epoxy–composite materials that are used quite frequently in high-performance structures such as aircraft. Kriz and Stinchcomb [1] verified that it is possible to calculate the complete set of elastic mechanical properties for graphite–epoxy fiber-reinforced materials at any fiber–volume fraction by modifying equations previously developed to include transversely isotropic graphite–fiber properties. The influences of coupled diffusion of heat and moisture on the transient stresses in a composite were investigated analytically by Sih et al. [2,3] in this investigation, the moisture diffusion coefficient is taken to be temperature dependent, while the thermal diffusion coefficient is kept constant. The transient hygrothermal stresses in an infinitely long annular cylinder due to coupling of heat and moisture was successfully determined by Chang et al. [4]. Transient hygrothermal responses in a solid cylinder by the linear theory of coupled heat and moisture was presented by Chang [5]. To investigate transient hygrothermal analysis in an annular cylinder, a hybrid numerical method was used by Yang et al. [6]. By using the potential theory method, the general solution of three-dimensional steady-state isotropic hygrothermoelastic media was derived by Zhao et al. [7]. The hygrothermoelastic response of a hollow cylinder based on a coupled time-fractional heat and moisture transfer model was determined by Zhang et al. [8].

CONTACT N. K. Lamba navneetkumarlamba@gmail.com

RESEARCH ARTICLE

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Thermoelastic Modeling of Time Fractional Heat conduction in Circular Disk with Internal Heat Generation

Navneet Kumar Lamba[1*], H. S. Roy[2]

[1*] Department of Mathematics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, R.T.M. Nagpur University, MS, India, e-mail : navneet19021984kumar@gmail.com

[2] Department of Mathematics, S B Jain Institute of Engineering Technology & Management, Nagpur, MS, India.

ABSTRACT

In this paper, thermoelastic modeling of a circular sector disk is done under the influence of fractional time theory of thermoelasticity to evaluate the changes in temperature flow, displacement and stress behavior subjected to internal heat generation within it. At the fixed edge a time dependent heat flux is applied while thermally insulation type boundary are maintained at upper part of surface as well as the lower part surface is kept at zero temperature. Also certain boundary surfaces at $\varphi = 0$, $\varphi = \varphi_0$ are fixed as a function of temperatures field f_1, f_2 which is function of (r, z, t) respectively. Furthermore, method of Integral transformations is employed to determine the required solution of equation of heat conduction. The obtained expressions areof Bessel's type and in form of series. For numerical analysis the pure aluminum circular sector disk considered and obtained results are plotted as shown in figures.

Keywords: thermaldisk sector; fractional calculus theory; Method of Integral transformation, stress behavior.

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INTRODUCTION

A differential equation is said to beof fractional order if it's involves derivatives of fractional type. Fractional order theory of thermoelasticity is based on the heat conduction equation of fractional order and is utilized to solve many heat exchange problems in which physical properties are described in terms of fractional order. Various application of fractional order theory is observed in complex media for experimental as well as theoretical studies. Some of the applications found in polymers, glasses, dielectrics and semiconductors, random and disordered materials, porous, etc. Further generalization in heat equations constructs corresponding new generalized thermal stresses theory like Green and Naghdi theory based on thermo elasticity without energy dissipation, whereas Lord and Shulman theory leads telegraph equation by Cattaneo's. Due to memory based affects a lot of application of this theory found in field of science and technology, bioengineering, rheology, robotics etc.

Povstenko [1-6] develops lots of mathematical models with the heat conduction equation of fractional order and determined corresponding thermal stresses. Kamdi et al. [7-9] determined stress behavior due to temperature distribution in finite bodies respectively by fractional approach theory with convection on surfaces. Thakre and Warbhe [10, 11] studied time fractional order theory in non-homogeneous bodies subjected to moving heat source. Lamba and Khobragade [12] determined temperature and stresses in an uncoupled thermoelastic Analysis of a thick cylinder with radiation. Kedar et al. [13] examine thermoelastic state of a thermally sensitive F. G. thick hollow cylinder by integral transformation. Other work related to the

Corresponding Author : Navneet Kumar Lamba, Department of Mathematics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, R.T.M. Nagpur University, MS, India, e-mail : navneet19021984kumar@gmail.com

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Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

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THERMOSENSITIVE RESPONSE OF A FUNCTIONALLY GRADED CYLINDER WITH FRACTIONAL ORDER DERIVATIVE

Navneet Kumar LAMBA
Department of Mathematics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, Nagpur, INDIA
E-mail: navneet19021984kumar@gmail.com

The present paper deals with thermal behaviour analysis of an axisymmetric functionally graded thermosensitive hollow cylinder. The system of coordinates are expressed in cylindrical-polar form. The heat conduction equation is of time-fractional order $0 < \alpha \leq 2$, subjected to the effect of internal heat generation. Convective boundary conditions are applied to inner and outer curved surfaces whereas heat dissipates following Newton's law of cooling. The lower surface is subjected to heat flux, whereas the upper surface is thermally insulated. Kirchhoff's transformation is used to remove the nonlinearity of the heat equation and further it is solved to find temperature and associated stresses by applying integral transformation method. For numerical analysis a ceramic-metal-based functionally graded material is considered and the obtained results of temperature distribution and associated stresses are presented graphically.

Key words: time fractional, thick hollow cylinder, thermal stresses, internal heat generation, FGMs, thermosenstive.

1. Introduction

Fractional thermoelasticity involves the heat conduction equation of fractional order and the differential operator shows memory effects. At present, the theory of fractional calculus have wide applications in applied engineering and sciences like robotics, bioengineering, geology, etc. First in 2005, Povstenko [1] introduced the heat conduction equation of fractional order and described corresponding thermal stresses. Then after he developed and modify various new models based on the fraction theory of thermoelasticity as reflected in [2, 3, 4, 5, 6]. Thermosensitive bodies are those homogeneous or piecewise-homogeneous bodies whose thermo-physical characteristics are temperature dependent. Popovich *et al.* [7, 8, 9, 10, 11, 12] studied numerical-analytical solutions of various thermoelastic problems with non-steady heat-conduction in homogeneous thermosensitive bodies. All these bodies were subjected to prescribed temperature or heat flux on the boundaries which were completely linearized by using the Kirchhoff variable transformation technique.

Functionally graded materials (FGMs) are materials having compositions of a microstructure, or porosity across the volume of the material. Also this materials are adaptable as heat-resistant materials and have attractive application in furnace lines, space structures, fusion reactors and electronics component packaging. FGMs are new versions of composite materials that are microscopically inhomogeneous in unique characterization. Guo and Noda [13] determined the thermal stresses for a thin FGM cylindrical shell with effect of thermal shock. Cheng and Batra [14, 15] established an exact deflection relationship between different functionally graded plate theories and that of an equivalent homogenous Kirchhoff plate. Other related studies by assuming cylindrical bodies with different boundary conditions are described in [16, 17, 18, 19, 20, 21, 22].

During solidification or sublimation or melting most thermally sensitive materials release significant amounts of energy. Also, during the heating process these materials absorb energy and transfer energy to the environment in the cooling process. Therefore, an analysis of time fractional thermo-sensitivity is very important in various cylindrical structures which are made of FGMs. Recently, Thakare and Warbhe [23] studied the time fractional order thermoelastic problem of a thermally sensitive functionally graded thick hollow cylinder with the effect of internal heat source. Thakre *et al.* [24] solved a two dimensional

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Valuation of Genotoxic Effect of Aqueous Organic Compound with Allium Sativum [Garlic]

Smita S. Kharkale-Bhuyar

Assistant Professor

Shri Lemdeo Patil Mahavidyalaya, Mandhal, Kuhi, Nagpur, Maharashtra, India

Abstract: *The current study was deliberate to estimate the genotoxic effect of 1,2,4,5-tetrazin using Allium sativum [Garlic] root chromosomal abnormality analyse. Root tips of Allium sativum were treated with different concentrations of 0.001M, 0.002M, 0.003M, 1,2,4,5-tetrazin with 10% Dimethyl Sulfoxide-Water were used in the current study. After treatment Various types of physiological hydrolyzed, squashed, mitotic index (MI), cytological abnormalities and Chromosomal aberrations rate were scored. Then the results exposed a genotoxicity effect as well as significance reduction in the Mitotic index of toxic effect was found to be dose dependent.*

Keywords: Allium Sativum., Garlic, Mitotic Index, 1,2,4,5-Tetrazin, Chromosomal Aberrations

I. INTRODUCTION

Development of industrial, technological as well as agricultural revolutions have resulted in an ever-growing negative outcome on the atmosphere in terms of its contamination and dilapidation. Various etymology effect, such as manufacturing, processing, conveyance and consumption besides reducing extra stock of ordinary properties enhance pressure to the atmosphere by accruing dissimilar dangerous constituents [1-3].In current ages, most of the use of pesticides, fertilizers, continuous air emission from industrial sources and vehicular traffic have contaminated environment with various organic chemicals [4-5]. 1,2,4,5-tetrazines have attracted much consideration due to their diverse medicinal, biology, industrial and agricultural importance. These compounds act as fungicide, insecticide, and anticonvulsant. It is used in antibiotic, bactiostatic, sedative and non-nutritive sweetener. They have been used as antiviral, antituberculosis and antisporiatic agents [6]. They are also used in the treatment of malaria. These are also applied in combating fungal and bacterial infection on plants. 1,2,4,5-tetrazines are show anticonvulsant, anti-inflammatory, insecticidal, fungal, analgesic antitumor properties, herbicidal activities [7-10] and antimalarial activities. Therefore, an attempt is made to investigate in some detail the structure ramifications of this apparently unique system.

The mutagenicity and genotoxicity evaluation, the ames test is the most commonly usedgenotoxicity assay in regulatory toxicology. The present attempt is to assess the genotoxic effects of 1,2,4,5 – tetrazine. In general, chromosome damage is considered as a measure of genetic hazards, which has been observed to be reliable index. The criteria for determinate of genotoxicity were decided by quantitative relationship between chemical exposure and mitotic disturbances. The genetic alterations scored in present investigation were relative abnormality rate, chromosome fragment, laggared formation, Chromosome Bridge, sticky metaphase and anaphase [11-13].

Among various plant bio-assays, chromosomal aberration assay in Allium sativum rootis one of the most dependable bio-assays which can be useful to notice extensive series of genetic damages[14-16].

In this study, it was used for mitotic index and genotoxic effect in Allium sativum with ,2,4,5-tetrazin with 10% Dimethyl Sulfoxide-Water treatment each of the selected parameter shows a toxic effect on tissue from a different angle. So this work was intent to investigate the cytologic, genotoxic changes induced by 2,4,5-tetrazin with 10% Dimethyl Sulfoxide-Water effect.

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Trace Elements Analysis in Ground Water Used for Drinking Purposes

Kushal Lanjewar[1] and Mahesh Gaidhane[2]*
[1]Department of Chemistry, Mohsinbhai Zaveri Mahavidyalaya, Deorgani (Wadsa), Dist: Gadchiroli (MS), India
[2]Department of Chemistry, Shri Lemdeo Patil Mahavidyalaya, Mandhal, Dist : Nagpur (MS), India
*Corresponding Author
E-mail: maheshgaidhane83@gmail.com

Abstract:

In this paper, assessment of trace metals in ground water used for drinking purposes in Nagpur city, Maharashtra, was carried out. Samples were collected from 10 Water Bodies supplying drinking water to the inhabitants in the region. Six samples were analyzed for 10 trace and macro elements (Al, Pb, Cr, Ni, Cu, As, Cd, Zn, Fe, and Co) and using Inductively Coupled Plasma (ICP) spectrophotometer equipped with an ultrasonic nebulizer. Results recommended that an adequate and suitable treatment must be applied to the water bodies having elevated concentrations of the metals and supplying drinking water to the consumers.

Metal contamination issues are becoming increasingly common, with many documented cases of metal toxicity. Metals are a natural part of our ecosystem occurring in soil, rock, air, water and organisms. A few metals, including Cu, Mn, Zn, Co and Fe are however essential for metabolism in humans & plants in trace amounts. It is only when metals are present in bio-available forms at excessive levels that they have the potential to become toxic. Chronic poisoning occurs due to heavy metal content in the drinking water. Estimation should be made to differentiate between the possible cause and source of such poisoning case.

Keywords: Metal contamination, Drinking water Toxicity, Trace metals in ground water bodies

Introduction:

Providing quality drinking water to all citizens who are deprived of access to water will serve as the breaking point of poverty alleviation in most developing cities. Water supply systems and drinking water inaccessibility in developing countries is a global concern that calls for immediate action. About 884 million people in the world still do not get their drinking water from approved sources, and almost all of these people live in developing regions [1].

Water related diseases can often be attributed to exposure to elevated heavy metal concentrations of both organic and inorganic contaminants. Many of these compounds exist naturally, but their concentration has increased as a result of anthropogenic activities [2].

Living organisms require trace amounts of some metals including cobalt, copper, iron, manganese, molybdenum, vanadium, strontium and zinc. Excessive levels of these essential metals are detrimental to the organisms [3]. Non- essential metals like cadmium, chromium, mercury, lead, arsenic and antimony are of more concern to surface water system because these metals produce undesirable effects on human and animal life. Once these metals enter in a system, they remain for relatively longer periods [4]. Once absorbed, inorganic metals are capable of reacting with a variety of binding sites in the human body and have strong attraction to biological tissues. Natural water contains toxic metals in traces. All metals exist in surface water in colloidal, particulate and dissolved forms, although dissolved concentrations are generally low [5].

The magnitude of danger of environmental pollution by heavy metals was probably for first time realized with the Minimata disaster in Japan, where thousands of peoples suffered with mercury poisoning after consuming the fish caught in Minimata Bay. The bay got contaminated with mercury released from vinyl chloride plant between 1953 and 1960[6]. Similarly, it was also reported in Japan in 1955 that cadmium caused the fatal Itai-Itai disease in human beings, mainly in women over forty [7].

Heavy metals are important environmental pollutants and their toxicity is a problem of increasing significance for ecological, evolutionary, and environmental reasons. Heavy metals have played great roles in the ascents of present-day civilization. In ancient times, the wealth of Emperors and Kings was attributed to the possession of metals like iron, gold, silver copper etc. in different forms. Still today, the dependence of heavy metals has not decreased as these are very commonly used in agriculture, medicine, engineering etc.

Shri Lemdeo Patil Mahavidyalaya MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur

लोकनाथ यशवंत यांच्या कवितेचे वेगळेपण

डॉ. तीर्थराज कापगते
श्री. लेमदेव पाटील महाविद्यालय, मांढळ
८६५७०४९५०७
tirtharajkapgate@gmail.com

लोकनाथ यशवंत हे मराठी दलित कवितेतील एक महत्त्वाचे आणि सर्वपरिचित असे नाव आहे. आजपर्यंत त्यांचे आता होऊन जाऊ द्या ! (१९८९) ..आणि शेवटी काय झाले ? (१९९५) पुन्हा चाल करू या ..! (२००९) बाकी सर्व ठीक आहे... (२०१४) हे चार संग्रह प्रकाशित झाले आहेत. त्यांच्या संग्रहांना अनेक पुरस्कार लाभले आहेत. त्या कवितेचा अभ्यास विविध विद्यापीठाच्या अभ्यासक्रमातून होतो आहे. दलित कवितेत लोकनाथ यांच्या कवितेचे वेगळेपण अनेक अंगांनी तपासून पाहण्यासारखे आहे. या कवितेची वाङ्मयीन गुणवत्ता व मौलिकता कळण्यासाठी तिच्या काही वेगळ्या वैशिष्ट्यांची चर्चा करायला पाहिजे. त्यांच्या कवितेने कवितेच्या रचनातंत्राला वेगळी शैली प्रदान केली व तिचे वाह्य स्वरूप बदलवून तिच्या आविष्कारासोबतच अंतरंगातही विलक्षण सामर्थ्य पेरले.

केवळ दलित कवितेतच नाही तर एकूणच मराठी कवितेच्या परंपरेत तिचे वेगळेपण समजून घेणे आणि या कवितेने दलित कवितेला नवा चेहरा का व कसा दिला आहे हे तपासणे गरजेचे आहे. विशेष म्हणजे आजच्या आव्हानांशी आणि काळाशी तिचे काय नाते आहे हे समजून घेणेही आवश्यक आहे. त्यासाठी ती प्रकाशित झाली त्या काळाचा आपण अगदी संक्षिप्त आढावा घेतला पाहिजे.

मराठी दलित कविता :

मराठीमध्ये दलित कविता ही पोस्टर पोएट्रीसारखी सुरू झाली. रस्त्यावर बाहेर आपापसात बोलणाऱ्या लोकांसोबत ती सुरु झाली. दलित कवितेचा जन्म चळवळीतून झाला. डॉ. बाबासाहेब आंबेडकरांच्या क्रांतिकारी तत्त्वज्ञानातून १९६० नंतरच्या काळात दलित साहित्य चळवळ उदयाला आली. आणि त्यातून या कवितेची निर्मिती झाली. हे दलित कवितेचे माध्यम दलित कवींनी एखाद्या धारदार शस्त्रासारखे वापरले. ती एकाच वेळी अत्यंत प्रभावीपणे व्यक्ती आणि समूह याचा आक्रोश व्यक्त करू लागली. तिच्यात हजारो वर्षे दडपल्या गेलेल्या समाजाची वेदना होती. तिच्यातील नकाराची भाषा येथील परंपरेला नकार देते ; कारण ती हे जग आणि जीवन नव्याने मांडू पाहण्याचे स्वप्न घेऊन मराठी साहित्यात अवतरली होती ; आणि त्यासाठी तिने येथील माणसांशी नाते जोडले.

ही दलित कविता वासष्ट- पासष्ट पर्यंत ती जोरदार कृतीवादी होती. पुढे १९७२ मध्ये दलित पँथर मुव्हमेंट सुरु झाली. दलित पँथर चळवळीला सुरुवात झाल्यानंतर एकूणच दलित साहित्य चळवळीच्या अविष्कारणाला फार बहर आला होता. मात्र पुढे ती चळवळ थंडावली. लोकनाथच्या यांच्या भाषेत सांगायचे तर,

'तम विराट मोर्च्याचे रुपांतर शेवटी आमसभेत होते
यापेक्षा आपली शोकांतिका कुठली होऊ शकते ?'[1]

नव्वदच्या दशकात ही दलित सांस्कृतिक चळवळ मंदावली, त्या मंदगतीचे नाते दलित राजकीय चळवळीशी असल्याचे निरीक्षण अभ्यासक नोंदवतात. त्याकाळात स्वतः दसाळ लिहिणे बंद करतात. एकून दलित कविता थांबली होती .

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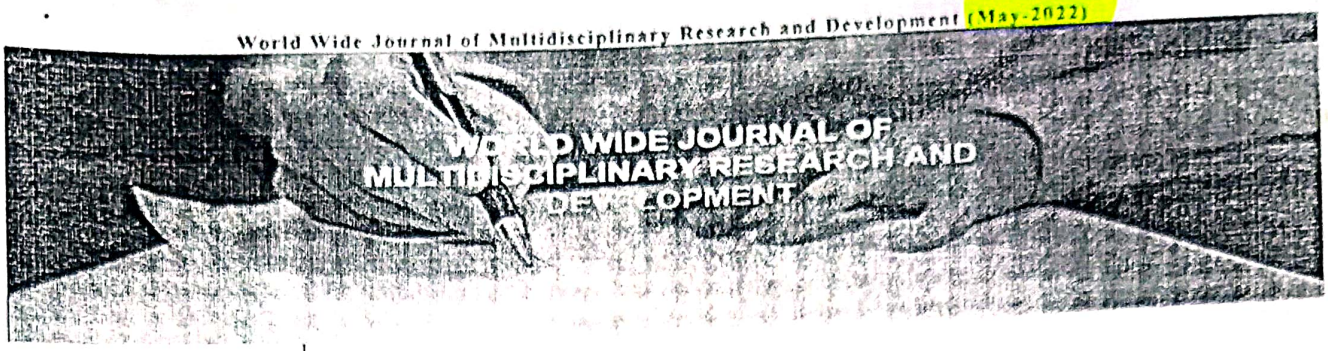

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डॉ. तीर्थराज कापगते
श्री. लेमदेव पाटील महाविद्यालय, मांढळ

मराठी भाषांतरित साहित्याने वाचकांची अभिरुची समृद्ध केली

डॉ. तीर्थराज कापगते

Abstract
आजच्या जागतिकीकरणाच्या पार्श्वभूमीवर भाषांतरित साहित्याला फार महत्त्व प्राप्त झाले आहे. जगातील विविध देश, त्या देशांतर्गत अनेक प्रदेश आणि भाषा यांच्यामध्ये सांस्कृतिक आणि वाङ्मयीन देवाण-घेवाणीची आजच्या काळात खूप जास्त गरज निर्माण झाली आहे. संवादाच्या अशा गरजेतूनच साहित्याची भाषांतरे केली जातात. या भाषांतरित साहित्याने मराठी वाचकांची अभिरुची समृद्ध केली आहे. ग्लोबल व्हिलेजमधील सारी वाचनप्रेमी माणसे जणू वाचन आणि अभिरुचीच्या एका अंगणात बसलेली असून त्या भाषांतरित पुस्तकातील चिरंतन मानवी मूल्यांचा एकाच पातळीवर अनुभव घेत आहेत, परस्परांशी अविरत संवाद करत आहेत; आणि एकमेकांच्या संस्कृतीच्या देवाणघेवाणीच्या गोष्टी परस्परांशी जणू करत आहेत, असे चित्र आज भाषांतरित साहित्यामुळे दिसून येते.
'ट्रान्सलेशन' हा शब्दच मुळात लॅटीनमधून आलेला आहे. ट्रान्स म्हणजे पलीकडे आणि लेशन म्हणजे नेणे . आपल्या विश्वाच्या पलीकडे ही भाषांतरित साहित्य वाचकाला घेऊन जाते. त्यामुळे कलाकृतीतील काळाच्या विवक्षित तुकड्याचे दर्शन तर घडतेच; पण त्या त्या प्रदेशातील नैसर्गिक वातावरण, संस्कृती, रितीरिवाज, राहणीमान, बोलीभाषा या सगळ्यांची माहिती वाचकाला होते. भाषांतरकाराजवळ शब्दप्रभुत्व व सर्जनशीलता असली आणि मूळ लेखकाच्या भावनात्मक प्रतिभेशी त्याचा सूर जुळला की दोन्ही भाषांमधील द्वैत संपते आणि त्या कलाकृतीचा आस्वाद घेताना अलौकिक आनंद मिळतो.

मराठी साहित्याचा वैशिष्ट्यपूर्ण प्रवाह

आपल्या मराठी साहित्यात भाषांतरांची आहे. इंग्रजी , जर्मन , रशियन , हिंदी , बंगाली, कानडी अशा विविध भाषांमधील साहित्यकृतींची आणि वैचारिक ग्रंथांची भाषांतरे मोठ्या संख्येने झाली आहेत. एकेकाळी बंगाली साहित्याच्या भाषांतरांना अधिक मागणी होती ; कारण रवींद्रनाथ , शरच्चंद्र यांच्यासारख्या उत्तुंग प्रतिभेच्या साहित्यिकांचे साहित्य बंगाली भाषेत आहे. केवळ भाषांतरामुळेच हे महान लेखक मराठी वाचकांचे आवडते लेखक झाले. इतर अनेक भाषांमधूनही आजपर्यंत अनेक चांगली पुस्तके मराठीमध्ये आली आहेत. ' भाषांतरीत साहित्य ' हा आज मराठी साहित्याचा एक वैशिष्ट्यपूर्ण प्रवाह झाला आहे.
सातत्याने व विपुल प्रमाणात आलेल्या या भाषांतरानी मराठीला खूप समृद्ध केलं आहे. लिओ टॉलस्टाय या जगप्रसिद्ध लेखकाचं 'कबुलीजबाब ', दस्तोयाव्स्कीचं 'क्राईम ॲण्ड पानिशमेन्ट' ,अर्नेस्ट हेमिंग्वेचं पु.ल.नी केलेलं 'एका कोळियाने आणि व्हिक्टर फ्रॅन्कलचं ' अर्थाच्या शोधात ' ' बर्टांड रसेल ' यांचं ' सुखी माणसाचा सदरा ' अशी जागतिक दर्जाची कितीतरी पुस्तकं मराठीत आली आहेत, त्यात अनेक नोबेल विजेत्या लेखकांचं साहित्य आहे, ज्यांनी वाचकांना त्या त्या मूळ पुस्तकांचा समग्र अनुभव दिला. ललित आणि वैचारिक अशी सर्व [illegible] आहेत पंडित नेहरूंनी अहमदनगरच्या तुरुंगात लिहिलेला 'डिस्कव्हरी ऑफ इंडिया' [illegible] साने गुरुजी आणि [illegible]

Correspondence:
डॉ. तीर्थराज कापगते
श्री. लेमदेव पाटील महाविद्यालय
मांढळ

Shree Lemdeo Patil Mahavidyalaya MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Tah. Kuhi, Dist. Nagpur.

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कविता-रती

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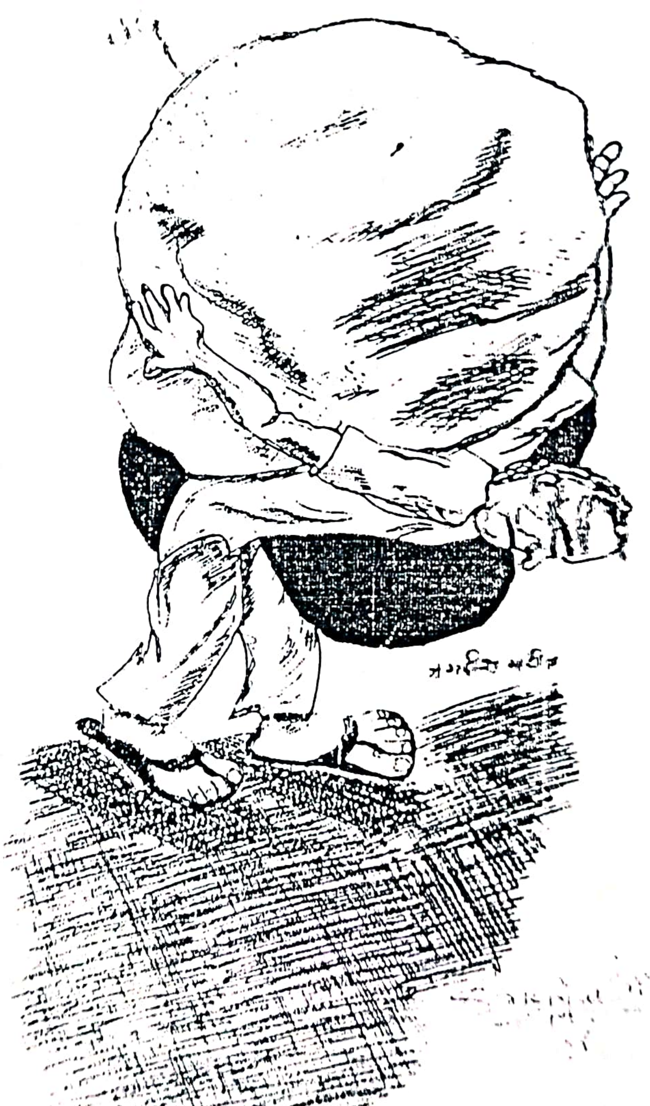

'गणपत वाणी' (बा. सी. मर्ढेकर) :
गणपत वाण्याचे फिरचोळ कवितांचे दुकान !

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'मर्ढेकरांची कविता' या संग्रहातील 'गणपती वाणी ...' ही प्रसिद्ध कविता आहे. मर्ढेकरांच्या कविता दुर्बोध म्हणून सर्वसामान्य रसिकांपासून दूर असल्या, तरी त्यांचा 'गणपती वाणी' अनेकांना शालेय पुस्तकातून कधीतरी भेटत असतो. एक वेधक आणि विशिष्ट शब्दचित्र म्हणून या कवितेकडे पाहिले जाते. सामान्य माणसांची अपुरी राहणारी छोटी छोटी स्वप्ने आणि स्वप्नपूर्तीपूर्वीच त्याला मिळणारी जीवनमुक्ती याचे एक करुण चित्र ही कविता रेखाटते. एका एकाकी, उपेक्षित माणसाविषयी इतका सूक्ष्म विचार करणाऱ्या मर्ढेकरांच्या कल्पनाशक्तीविषयी आदर वाटतो. त्यांच्या निरीक्षण व कल्पनाशक्तीचे जसे कौतुक वाटते तसे ही कविता त्यांच्या इतर कवितांपेक्षा वेगळी असल्याने थोडे आश्चर्यही वाटते.

[illegible] गणपत वाण्याचे [illegible] प्रभावी चित्रदर्शी काव्य रेखाटण्यात मर्ढेकर आपली अनुप कल्पप्रतिभा [illegible] [illegible] ? या रूपकातून त्यांना वेगळा अर्थ तर अभिव्यक्त करायचा नसेल ना? असे प्रश्न पडल्याने या कवितेकडे जरा वेगळ्या दृष्टीने पाहण्याचा हा एक प्रयत्न आहे.

'गणपत वाणी बीडी पितांना
चावायाचा नुसतिच काडी ;
म्हणायचा अन् मनाशीच की
हा जागेवर बांधिन माडी.'

फिरचोळ शब्दांच्या कवी, गणपत वाणी [illegible] म्हणजे कवी असण्याच्या, खोट्या, कल्पनेच्या राज्यात वावरतो ! नुसतेच चावून चोथा झालेले काडीसारखे रुक्ष, नीरस शब्द पुन्हा पुन्हा प्रसवतो, चावतो व फेकतो ; आणि तरीही त्याला वाटते, म्हणजे स्वतःशीच तो बोलत राहतो की, आपण या बळावर एक दिवस मोठे कवी होऊन या शब्दांच्या वीटांनीच मोठी इमारत बांधू. आता इमारत नुसत्या वीटांनी थोडीच बांधली जाते ? शिवाय कवितेतले शब्दही मजबूत, [illegible] [illegible]

[illegible] शब्दांच [illegible] आहे त शब्द निर्बुद्ध [illegible] पचसंवेदनांना चिमटीत पकडणारे सत्त्वशील असू दे - 'दौर्दान्त सत्व माझ्या [illegible] दे भाषा- शरीरा...' अशी मागणीच ते 'भगू दे काठिण्य माझे...' या त्यांच्या एका कवितेत करतात. याच कवितेत कवी म्हणून माझ्याजवळ केवळ उत्कट संवेदना असणंच आवश्यक नाही, तर मला

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White light emission via Pb^{2+} to Dy^{3+} energy transfer mechanism in $CaTiO_3$ phosphor

D.R. Taikar [a,*], S.J. Dhoble [b]

[a] Department of Physics, Shri Lemdeo Patil Mahavidyalaya, Mandhal 441210, India
[b] Department of Physics, R.T.M. Nagpur University, Nagpur 440033, India

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ABSTRACT

$CaTiO_3$ activated Pb^{2+} and Dy^{3+} with different doping concentrations were prepared by combustion technique. The prepared phosphors were characterized by XRD, SEM, and photoluminescence (PL) techniques. The Pb^{2+} doped $CaTiO_3$ phosphor exhibits broad n-UV emission. The effect of varying Pb^{2+} doping concentration on PL result and critical transfer distance were studied. The PL spectra of $CaTiO_3$:(Pb^{2+},Dy^{3+}) exhibit characteristic Dy^{3+} emission in blue (483 nm) and yellow (578 nm) region. At higher concentration of Dy^{3+} in $CaTiO_3$:(Pb^{3+},Dy^{3+}) phosphor, efficient energy transfer occur from Pb^{2+} to Dy^{3+}. The CIE chromaticity study showed $CaTiO_3$:(Pb^{3+},Dy^{3+}) phosphor emits light in white region, which can be useful white phosphor for ultraviolet convertible white-light emitting devices.

1. Introduction

A perovskite structured calcium titanate ($CaTiO_3$) is a very important family member of ABO_3 type compounds in which 'A' represents the cation of larger ionic radii than cation 'B' [1]. These materials have shown their utility in past, in fundamental research as well as in many technical applications like electronic engineering, biotechnology, material science, mineralogy, etc [2–6]. $CaTiO_3$ posses many advantages like low dielectric loss, high dielectric constant, high thermal and chemical stability, large temperature coefficient of resonant frequency, which make this compound suitable for electronic devices as a high frequency dielectric multilayer capacitor material and dielectric resonator [7–9]. Rare earth (RE) doped $CaTiO_3$ is considered to be a promising luminescent host for variety of applications in luminescence and display devices. Many researchers reported Eu^{3+} doped and Pr^{3+} doped $CaTiO_3$ are potential red light emitting phosphors for various display applications [10–15]. PL studies using RE dopent like Tb^{3+} [16], Sm^{3+} [17,18], Nd^{3+} [19,20], Ho^{3+} [21,22], Dy^{3+} [23,24], Er^{3+} [25], Yb^{3+} [26] in $CaTiO_3$ have been published in many literatures. Due to low phonon energy ($\sim 700\ cm^{-1}$), $CaTiO_3$ is an attractive host for upconversion (UC) [27]. X. Chen et al. [28] reported efficient white UC luminescence in $CaTiO_3$ codoped with Er^{3+}, Tm^{3+} and Yb^{3+} ions. Many techniques have been employed to synthesize $CaTiO_3$ phosphor, such as mechano-chemical [29], solid state reaction method [30], co-precipitation method [31,32], sol-gel method [7], polymeric precursor method [33], combustion method [34], microwave hydrothermal method [35].

Among various RE ions, Dy^{3+} ion is the most promising and widely studied RE ion for producing white light as it exhibits emission in blue and yellow region. PL study of Dy^{3+} doped $CaTiO_3$ phosphor has been reported in past by many researchers, but their emission is not efficient [23,24,36]. In order to enhance the emission intensity of $CaTiO_3$:Dy^{3+} phosphor, some effort has been taken by

* Corresponding author.
E-mail address: deepak_taikar@yahoo.co.in (D.R. Taikar).

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Optical transitions and radiative properties of green emitting Ho^{3+}:YVO_4 phosphor

Vijay Singh, *[a] M. Seshadri,[b] Deepak Taikar,[c] S. J. Dhoble[d] and R. S. Yadav[e]

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The Ho^{3+}-doped YVO_4 phosphors were successfully prepared *via* a sol–gel process in which citric acid was used as a chelating agent. X-ray diffraction (XRD) confirmed the effective inclusion of Ho^{3+} ions into the host matrix with the formation of single phase YVO_4. The surface morphology was observed using SEM, the results of which showed a grain growth propensity and the agglomeration of prepared phosphors. The V–O (VO_4^{3-}) vibration mode was analyzed through Fourier transform infrared (FTIR) spectra. The spectroscopic properties were reported through UV-vis-NIR diffuse reflectance and photoluminescence (PL) spectra. The Judd–Ofelt (J–O) intensity parameters $\Omega_2 = 0.03 \times 10^{-20}$ cm^2, $\Omega_4 = 0.22 \times 10^{-20}$ cm^2, and $\Omega_6 = 0.23 \times 10^{-20}$ cm^2 obtained for the $Y_{0.97}VO_4$:$0.03Ho^{3+}$ phosphors were used to obtain the total transition probabilities (A_T), radiative lifetimes (τ_{rad}) and branching ratios (β) for the certain transitions of Ho^{3+} ions. Under 310 nm UV excitation, the visible emission spectra were measured, and an intense emission was observed around 541 nm (green region) for all the samples. The emission cross-section $\sigma_P(\lambda)$ was 3.22×10^{-21} cm^2 and the branching ratio (β) was 0.816; these were investigated to capture the optimal concentration of the $Y_{0.97}VO_4$:$0.03Ho^{3+}$ phosphor. The estimated color coordinates were observed in the green region of CIE diagram. Ultimately, the superior properties ($\sigma_P(\lambda)$, β, and color purity) of $Y_{0.97}VO_4$:$0.03Ho^{3+}$ phosphor may make it suitable for green emitting devices.

1. Introduction

Recently, the zircon structured orthovanadate (AVO_4, A = trivalent metal ion) has attracted substantial research attention because of its applicability in a wide variety of areas.[1] This material is not only used as a luminescent host material but has also been used in diverse applications in the fields of gas sensing, high power lasers, fuel cell anodes, and counter electrodes in electrochromic devices.[2–4] Yttrium vanadate (YVO_4) is a well-recognized host lattice for rare-earth (RE) activators from the family of AVO_4. YVO_4 shows excellent thermal, mechanical, and optical properties, and it exhibits wide absorption in the UV region; therefore, RE doped phosphors are widely used for optoelectronic application alongwith biosensors and laser devices.[5–12] YVO_4 shows high birefringence and can be used as a polarizer in the infrared (IR) region.[13] YVO_4 is also a good up-conversion host due to its low phonon energy (~880 cm^{-1}). Many studies have examined up-conversion luminescence in RE^{3+}-doped and co-doped YVO_4 phosphors.[14–17] YVO_4:Nd^{3+} performs better than YAG:Nd^{3+}, and it is therefore a good laser excitable host crystal for Nd^{3+} ions, and has shown remarkable applicability in laser-diode pumped micro lasers.[18–21]

At present, to conquer multiple color tunability, the phosphor materials are used in energy conversion and materials technology. Due to its efficient energy conversion, the high color purity and thermal stability of Eu^{3+}-doped YVO_4 make it a promising red phosphor for use in a wide range of applications in luminescence and display devices, such as fluorescent lamps, cathode ray tubes, plasma display panels, *etc.*[22–30] Foka *et al.*[31] synthesized Dy^{3+}-doped YVO_4 phosphor *via* the combustion route and reported white emission with excitation in the UV region. Liu *et al.*[32] synthesized YVO_4:Ln^{3+} (Ln = Eu, Sm, Dy) *via* the microwave heating method and reported its morphology and photoluminescence (PL) results. Xu *et al.*[33] studied the effects of organic additives on the shape and morphology of RE^{3+}-doped YVO_4 phosphors synthesized *via* a hydrothermal method. They have found remarkable results, which can be used for tunability in the display panels. Their PL study indicates an efficient multicolor emission that can be useful in lasers and displays related to the optoelectronic devices. Huang *et al.*[34] synthesized (Bi^{3+}, RE^{3+}) co-doped YVO_4 phosphor by a solid-state reaction technique and reported that the phosphors could improve the efficiency of the power conversion of dye-sensitized and crystalline silicon (c-Si) solar cells. The energy transfer between single and triply doped RE^{3+} ions in the YVO_4 host and its luminescence property have

[a]Department of Chemical Engineering, Konkuk University, Seoul, 05029, Republic of Korea. E-mail: vijayjiin2006@yahoo.com
[b]Department of Physics, KG Reddy College of Engineering and Technology, Hyderabad-501504, India
[c]Department of Physics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, 441210, India
[d]Department of Physics, R.T.M. Nagpur University, Nagpur, 440033, India
[e]Department of Zoology, Institute of Science, Banaras Hindu University, Varanasi, 221005, India

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Effect on Allium cepa and Allium sativum by organic substance of 1,2,4,5-tetrazin

Smita S. Kharkale-Bhuyar Assistant Professor

Shri Lemdeo Patil Mahavidyalaya, Mandhal, Kuhi, Nagpur, Maharashtra, India

Abstract: Study investigated effect on Allium sativum L. (garlic) and Allium cepa L. (onion) by organic substance of 1,2,4,5-tetrazin were analyzing root chromosomal abnormalities. The root tips of the two plant species were treated with different concentrations (0.001M, 0.002M, 0.003M) of 1,2,4,5-tetrazin mixed with 10% Dimethyl Sulfoxide-Water. After treatment, various types of physiological hydrolyze, squashes, mitotic index (MI), cytological abnormalities, and chromosomal aberrations were scored. The results indicated a genotoxic effect, with a significant reduction in the mitotic index found to be dose-dependent. The findings suggest that 1,2,4,5-tetrazin has a toxic effect on the root cells of garlic and onion, and that the magnitude of the effect increases with increasing concentration of the chemical.

Keywords: Mitotic index, genetoxicity, root-shoot ratio, Chromosomal aberrations.

Introduction

Among all crops, onion and garlic are two important crops worldwide with a production of 26.94 million metric tons of garlic and 4.46 million metric tons of onion. And second ranks in India region 13.20 lakhha and manufacture 209.31 lakh tones of onion and in garlic, too second in zone 2.81 lakh ha and manufacture 6.17 lakh tonnes, next to China. In India 30 to 36species have been reported[1-3]. This depicts an increased consumption in the recent years due to the expansion of the Mediterranean and Asian cuisine. While, presence confidential as vegetables, due to their strange taste and smell, they are majorly existence used in cooking presentations. Together onion and garlic have great demand assigning to their remedial and beneficial ideals in both customary as well as current drug.

Considering the contemporary existence and position of these corm harvests in everyday lifecycle, onion and garlic are being treated into dissimilar lubricants, pastes, powders, pickles, and extracts. All these processed forms of onion and garlic pronounce different properties as well as a significant difference in the properties and quantities of their bioactive compounds. In 1,2,4,5-tetrazines have involved abundant consideration due to

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The Study Of The Changing Nature Of Career Opportunities In Sports

DR. Avinash Titarmare
Shri Lemdeo Patil Mahavidyala, Mandhal, Dist. Nagpur
Mail.id. avinashltitarmare@gmail.com

Abstract:
Today, the popularity of sports has increased due to the increasing competition and brilliant careers in sports. Today many career options are open in it. Sports do not mean only cricket but also football, hockey, and tennis, and increasing health services towards sports. In which trainers, coaches, etc. come. Pursuing a career in sports not only gives freedom from a desk job but also a chance to skyrocket at will. Not only can you make a career in sports as a player, but you can also find career options by joining other activities. If you have a passion for whatever sport you play, you can carve a niche for yourself in this profession. One can work in fields such as sports medicine, marketing, administration, management, and journalism. Today, many important players have also contributed to popularizing sports. The doors are open in this field for both men and women. Many great players like Virat Kohli, Mahendra Singh Dhoni, Sachin Tendulkar, Sania Mirza, Saina Nehwal, and Abhinav Bindra have attracted youth towards sports. In this research paper, the changing nature of career opportunities in sports has been studied.

Keywords: Career Opportunities, Sports, Medical, Trainer, Coach, Journalism

Introduction:
The scope of sports-related careers is increasing in India. Everything is changing with time and so is the mindset of parents. There has been significant growth in sports-related careers in India in the last decade. With interest in sports other than cricket in India and the success of tournaments like the Indian Super League and Pro Kabaddi League, things are looking bright. The success of sportspeople at a recent international sporting event has focused attention on sports careers. Sports help you to make your body physically fit and keep your mind good. If you choose sports as a career, it gives you a lot of fame and money too. These sports career options include sports journalist, sports manager, sports marketing, sports coach, sports dietician, etc.

Till now there used to be only relation between sports and jobs that states and centers do some recruitment in jobs from sports quota, but now there is much more ahead of it. The benefits of the recently organized 'Khelo India Scheme' by the Central Government's Youth Affairs and Sports have further increased the attraction of people towards sports. The reason for this is also to bring laurels to the country for the good performance of the players for the last few years. Due to this investment in this sector has also increased. According to a report by Group M's ESP Property and Sports Power, there has been a 14.1 percent increase in sports sponsorship in the country in the last year. In the year 2017, Rs 7,300 crore was spent on advertising in sports. Whereas in 2016, 6400 crores were spent on this. For this reason, various career options are open in sports and through this one can also get a government job. That's why it is necessary to research what changes have happened in career opportunities in sports.

Data Collection Method Used for Research:
The research paper has depended on secondary data.

Objective of Research:
1) To study the changing nature of career opportunities in sports.
2) To study the skills required for various career opportunities in sports.

The Changing Nature of Career Opportunities in Sports:
In today's time, sports clubs are developing rapidly. People's interest is increasing in this. That's why big companies are also turning towards these clubs. Companies are mobilizing to establish themselves as brands in sports clubs. In such a situation, they will need a skilled manager in the future. This whole scenario is indicating that soon sports management stream will also emerge under business management. Skilled and experienced experts are needed to make equipment/goods used in sports. Some companies involved in the production of sports equipment/goods require experts in sports. Under the Start-up India scheme, there are now many start-ups that are doing sports manufacturing.

Shree Lemdeo Patil Mahavidyala MANDHAL
Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuni, Dist-Nagpur

The Study Of National Code Against Age Fraud In Sports And Its Current Status

Dr. Avinash Titarmare
Shri Lemdeo Patil Mahavidyala, Mandhal, Dist. Nagpur
Mail.id. avinashltitarmare@gmail.com

Abstract:

To eliminate age fraud in sports and to ensure fair play, it is imperative to put in place an effective regulatory mechanism so that appropriate action is taken against athletes found guilty of age fraud. Therefore, the Government has decided that all sports federations/associations/bodies should take appropriate measures to prevent age fraud, as it amounts to fraud, which violates the very spirit of the game. Given the above, it has become necessary to adopt a National Code against age fraud in sports, backed by a well-established mechanism to prevent, detect and punish such offenses. In this research paper, National Code against age fraud in sports and its present status have been studied.

Keywords: Age Fraud, Sports, National Code, National Sports Federation

Introduction:

The National Code against Age Fraud in Sport, like the Competition Rules, forms part of the Sports Laws governing the rules of the game under which the game is played. Athletes and athlete support personnel are required to accept these Rules as a necessary condition for participating in any sporting event. The National Code against age fraud in sports is not subject to or limited by the requirements and legal standards applicable to criminal proceedings or employment matters. The policies and minimum standards outlined in the Code apply to all sports federations/associations/bodies. Under the Scheme of Assistance to National Sports Federations, the clause for suspension/de-recognition of recognition of NSFs applies for non-adherence to the eligibility criteria and code for recognition of National Sports Federations.

The National Code against age fraud in sports seeks to preserve the core values of sports which are honesty, fair play, and team spirit. Athletes indulging in age fraud in sports not only violate these core values but also put genuine athletes at a disadvantage. Furthermore, it also results in a sub-optimal level of performance for athletes who

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuhi, Dist-Nagpur

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Memory impact of hygrothermal effect in a hollow cylinder by theory of uncoupled-coupled heat and moisture

Jyoti Verma
Department of Mathematics, SVKMs NMIMS, School of Mathematics, Applied Statistics and Analytics, Navi Mumbai, India
Navneet Kumar Lamba
Department of Mathematics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, India, and
K.C. Deshmukh
Department of Mathematics, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, India

Abstract

Purpose – The purpose of the paper is to prepare the hygrothermal model with fraction order theory in a mathematical aspect.
Design/methodology/approach – In this study, linear hygrothermoelastic theory is adopted to analyze and discuss the memory effect in a finite length hollow cylinder subjected to hygrothermal loading.
Findings – Analytical solutions of temperature, moisture and stresses are obtained in this study by using the decoupling technique and the method of Integral transform.
Originality/value – The paper deals with the original work based on hygrothermal response in hollow cylinder by theory of uncoupled-coupled heat and moisture.

Keywords Hygrothermoelasticity, Fractional order theory, Hollow cylinder, Integral transform
Paper type Research paper

Introduction

Physically there exists a coupling effect between temperature and moisture in most materials. The coupling effect is significant for some porous and composite materials. The research concerning a solid and hollow cylinder has a wide application in industrial practice; however, only a limited portion of literature is available in the field of coupled heat and moisture. Some of the researchers study hygrothermal effect in a solid and hollow cylinder by using the linear theory of coupled heat and moisture and study the mathematical models.

Sih and Shih (1980) presented that the coupling between heat and moisture is an inherent part of the diffusion process that cannot be neglected, and the numerical investigation shows that the stresses derived from the coupled theory differ appreciably from the uncoupled results, both qualitatively and quantitatively. Sih *et al.* (1980) analytically investigated the influence of coupled diffusion of heat and moisture on the transient stresses in a composite and the coupling effect between temperature and moisture is found to be significant. Chang *et al.* (1991) determined a closed-form solution of temperature distribution, moisture and hygrothermal stresses by using variables separable technique and decoupling technique for a

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(R2028) A Brief Note on Space Time Fractional Order Thermoelastic Response in a Layer

Navneet Lamba
Shri Lemdeo Patil Mahavidyalaya,Mandhal

Jyoti Verma
SVKM'sNMIMS, School of Mathematics, Applied Statistics and Analytics

Kishor Deshmukh
R.T.M., Nagpur University

Shree Lemdeo Patil Mahavidyala MANDHAL

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuhi, Dist-Nagpur

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A Brief Note on Space Time Fractional Order Thermoelastic Response in a Layer

[1*]Navneet Lamba, [2]Jyoti Verma and [3]Kishor Deshmukh

[1*]Department of Mathematics
Shri Lemdeo Patil Mahavidyalaya, Mandhal
Nagpur, INDIA
navneetkumarlamba@gmail.com

[2]Department of Mathematics
SVKM's NMIMS, School of Mathematics, Applied Statistics and Analytics
Navi Mumbai, INDIA
jyotiverma.maths@gmail.com

[3]Department of Mathematics
R.T.M., Nagpur University
Nagpur, INDIA
kcdeshmukh2000@rediffmail.com

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Abstract

In this study, a one-dimensional layer of a solid is used to investigate the exact analytical solution of the heat conduction equation with space-time fractional order derivatives and to analyze its associated thermoelastic response using a quasi-static approach. The assumed thermoelastic problem was subjected to certain initial and boundary conditions at the initial and final ends of the layer. The memory effects and long-range interaction were discussed with the help of the Caputo-type fractional-order derivative and finite Riesz fractional derivative. Laplace transform and Fourier transform techniques for spatial coordinates were used to investigate the solution of the temperature distribution and stress functions. Numerical investigations are also shown graphically for non-dimensional temperature and stress for different space and time fractional derivative values, respectively. In addition, some applicable limiting cases are discussed for standard equations, such as wave equation, Laplace equation, and diffusion equation.

Keywords: Heat Equation; Caputo fractional derivative; Riesz fractional derivative; Integral transformation; Generalized Mittag-Leffler function; Temperature; Thermal stresses

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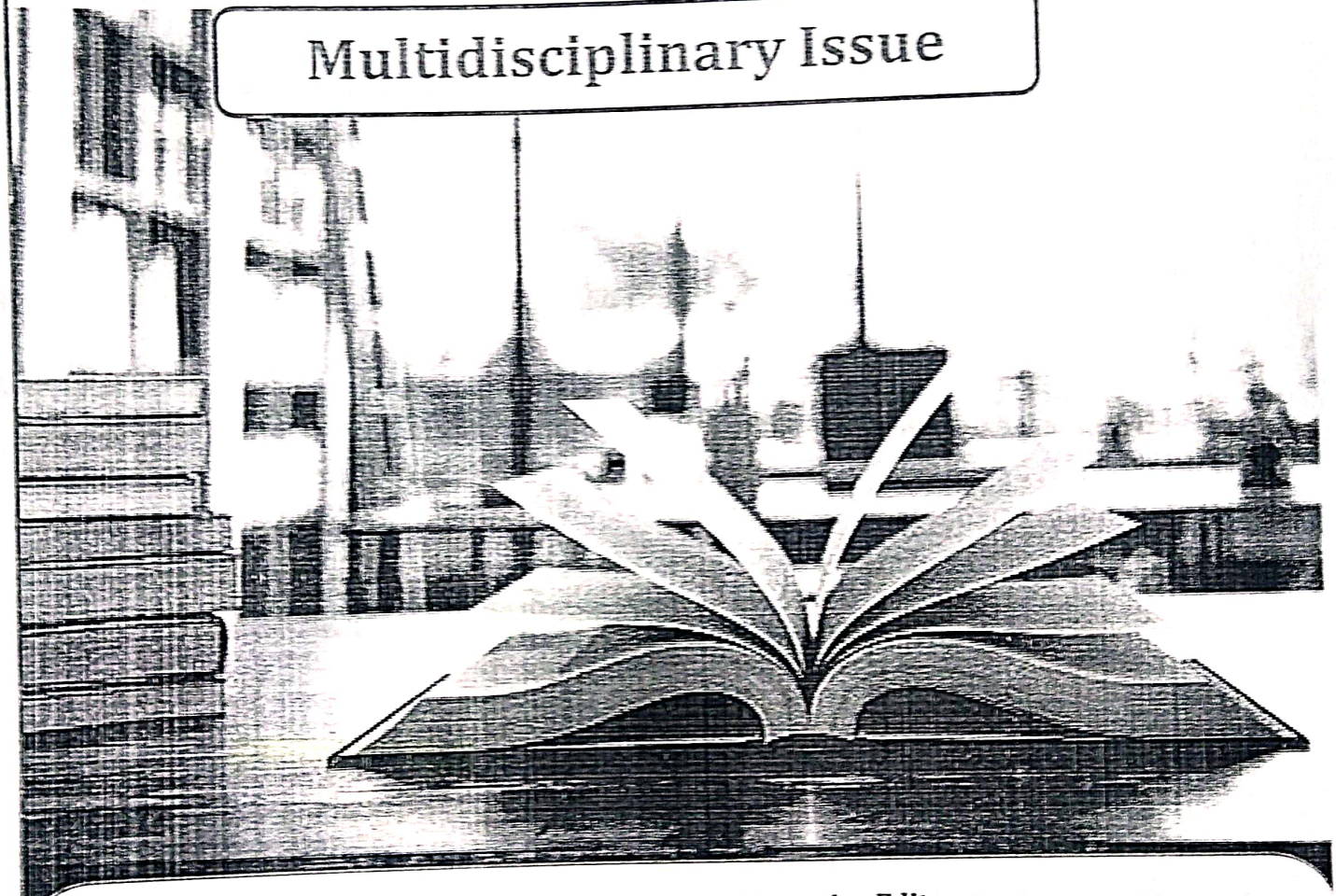

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झाडीपट्टी रंगभूमीचे मूळ दंडार लोकनाट्यात

डॉ.तीर्थराज कापगते
मराठी विभाग प्रमुख
श्री. लेमदेव पाटील महाविद्यालय, मांढळ
8657049507, kapgate2022@gmail.com

महाराष्ट्राच्या अतिपूर्वेकडील झाडाझुडपांनी युक्त अशा भूप्रदेशाला 'झाडीपट्टी' असे संबोधले जाते. चंद्रपूर, गडचिरोली, भंडारा आणि अलीकडील गोंदिया या चार जिल्ह्यांचा समावेश झाडीपट्टीत होतो. हा प्रदेश भरपूर पावसाचा, घनदाट वनराईचा आणि छोट्या-मोठ्या डोंगरांनी वेढलेला आहे. या झाडीपट्टीची स्वतःची एक वेगळी व वैशिष्ट्यपूर्ण रंगभूमी आहे. तिला 'झाडीपट्टी रंगभूमी' असे म्हणतात.

'झाडीपट्टीची रंगभूमी' जशी समृद्ध आहे तशीच तेथील 'लोकरंगभूमी'ही समृद्ध आहे. तिला अनेक शतकांची परंपरा आहे. फार पूर्वीपासूनच या परिसरात खडीगंमत, राधा, भिंगीमोंग, तमाशा आणि दंडार अशी प्रयोगक्षम लोकनाट्ये मनोरंजनाचे कार्य करीत होती. ही लोकनाट्य म्हणजे झाडीबोलीतील आद्य सर्जनशील दृक-श्राव्य नाट्याविष्कार होत. या सर्व लोकरंजनाच्या प्रकारांमध्ये 'दंडार' हा मुख्य कलाप्रकार आहे. झाडीपट्टी रंगभूमीवरील नाट्य आणि संगीताची मुळे या परिसरातील पारंपरिक 'दंडार' या लोककलेत खोलवर रुजलेली आहेत.म्हणजे झाडीपट्टी रंगभूमीचे मूळ दंडार लोकनाट्यात आहे असे दिसून येते.

मराठी रंगभूमी:

मराठी रंगभूमीला साडेतीनशे वर्षांची समृद्ध इतिहास आहे. "मराठी रंगभूमीची खरी सुरुवात ही तंजावरी नाटकांपासून (१६७६) झालेली आहे" १.सुमारे दोन हजार वर्षांच्या भारतीय रंगभूमीला महाराष्ट्रातील मराठी रंगभूमीनेही महत्त्वाचे योगदान दिले आहे. साहित्य आणि कलेचा थोर वारसा असलेल्या महाराष्ट्रातील मराठी माणूस हा नाट्यवेडा आहे. नाटक ही त्याच्या मर्मबंधातील ठेव आहे.

वैर्भर्भीय रंगभूमी:

पश्चिम महाराष्ट्रातील पुण्या-मुंबईप्रमाणेच वैदर्भीय माणूसही नाटकाचा दर्दी रसिक आहे. साहित्याच्या गौरवशाली परंपरेप्रमाणेच विदर्भालाही रंगभूमीची उज्ज्वल अशी परंपरा आहे. या वैदर्भीय रंगभूमीचे अभ्यासाच्या सोयीसाठी व-हाडची रंगभूमी , नागपूरची रंगभूमी आणि झाडीपट्टीची रंगभूमी असे तीन भागात विभाजन केले जाते. व-हाडात १९२७ पासूनच बालगंधर्वांनी दौरे काढून येथील नाट्यरसिकांच्या बळावर आपले संपूर्ण कर्ज फेडले, असे म्हणतात. नागपूर या उपराजधानीच्या शहरातील रंगभूमीचा इतिहास तर व-हाडच्याही पूर्वीचा आहे. संगीत नाटकाचा प्राण असलेली संवादिनी नागपुरात १८८६ मध्येच आली.

झाडीपट्टीची रंगभूमी:

पश्चिम विदर्भाला जशी रंगभूमीची समृद्ध परंपरा आहे. तशीच ती पूर्व विदर्भातील झाडीपट्टीलाही आहे. प्राचीन काळापासून झाडीपट्टीतील माणूस नाट्यकला, संगीत आणि नृत्यकलेचा भोक्ता आहे. संगीत नाटक हे तर झाडीपट्टीतील माणसांच्या रक्तातलं [illegible] झाडीपट्टीची रंगभूमी आजपर्यंत पश्चिम

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Data Article

Nanocrystalline α-Fe_2O_3: A superparamagnetic material for w-LED application and waste water treatment

Mahesh Gaidhane [a], Deepak Taikar [b,*], Pravin Gaidhane [c], Kalpana Nagde [d]

[a] Department of Chemistry, Shri Lemdeo Patil Mahavidyalaya, Mandhal, Nagpur, India
[b] Department of Physics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, Nagpur, India
[c] Department of Chemistry, Govindrao Wanjari College of Engineering & Technology, Nagpur, India
[d] Department of Physics, Institute of Science, Nagpur, India

ARTICLE INFO

Keywords:
Sol-gel
α-Fe_2O_3
Nanoparticles
Superparamagnetic
w-LED

ABSTRACT

Nanocrystalline α-Fe_2O_3 was synthesized by sol-gel technique and then characterized by X-ray diffraction (XRD), SEM, TEM, Fourier Transform Infrared (FTIR) spectroscopy, Vibrating Sample Magnetometry (VSM), and photoluminescence (PL) techniques. The X-ray powder diffraction analysis confirmed the formation of α-Fe_2O_3. Electron microscopy showed spherical morphologies with an average particle size of 30–40 nm. VSM study shows superparamagnetic nature of the synthesized nanoparticles. Furthermore, PL emission spectra showed an intense broad emission band centered at 570 nm with 393 nm excitation, indicating that it can be used for w-LED application. The CIE-chromaticity color coordinates of prepared material were calculated. The photocatalytic activity of the α-Fe_2O_3 nanoparticles was analyzed, which exhibited good photocatalytic activity for the removal AO7 from its aqueous solution.

Specifications Table

Subject area	*Spectroscopy, Physical Chemistry, Luminescence*
Compounds	α-Fe_2O_3 (Iron oxide)
Data category	Synthesized material, XRD
Dataacquisition format	*XRD, VSM, PL*
Data type	*Experimental and analyzed*
Procedure	*The α-Fe_2O_3 nanoparticles were synthesized via sol-gel method by using citric acid. To synthesize α-Fe_2O_3 nanoparticles, iron (III) nitrate nonahydrate [$Fe(NO_3)_3{\cdot}9H_2O$], citric acid and sodium hydroxide (NaOH) all are AR grade were used. Initially, 2 gm of $Fe(NO_3)_3{\cdot}9H_2O$ was dissolved in 70 ml of double distilled water and stirred for 15 min. Thereafter 4 gm of citric acid solution was added slowly to the above solution, and the mixture was stirred for 1.5 h. To adjust the pH value, the NaOH solution was added to the above mixed solution. The mixture was stirred on magnetic stirrer until the homogeneous solution was obtained. The homogeneous solution was continued to stirred and heated simultaneously at 80 °C to get highly viscous residual. Further it was dried at 100 °C, so that a gel precursor was formed which was annealed at 400 °C for 4 h to obtain α-Fe_2O_3 nanoparticles.*
Data accessibility	*The data is with this article.*

* Corresponding author.
E-mail address: deepak_taikar@yahoo.co.in (D. Taikar).

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Shri Lemdeo Patil Mahavidyalaya SEAL Mandhal

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuhi, Dist-Nagpur

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Formulation of calcium based 8-HQ fluorescent paint for fluorescent paint applications

Ritesh Raikundliya [a,*], N. Thejo Kalyani [b,*], S.J. Dhoble [a]

[a] Department of Physics, RTM Nagpur University, Nagpur 440033, India
[b] Department of Applied Physics, Laxminarayan Institute of Technology, Nagpur 440033, India

ARTICLE INFO

Keywords:
Caq_2
Pigment
Epoxy
Urea formaldehyde
Luminous paints

ABSTRACT

We report the formulation of luminous paints with calcium-based quinoline complex, bis(8-hydroxyquinoline) (calcium) – Caq_2 as a pigment (where Ca = Calcium, q = 8-hydroxy quinoline). Fourier transform infrared (FTIR) spectra, UV–Visible absorption, Photoluminescence (PL) spectra and photometric evaluation of the pigment were probed to evaluate its structural, optical and photometric properties. The excitation spectra of Caq_2 pigment portrays a broad excitation peak at 370 nm, while emission spectra reveal a broad peak, registered at 473 nm which falls in the bluish-green region of the visible spectrum. Further, fluorescent paints were formulated on glass slides with epoxy resin/ urea formaldehyde as binder and toluene as solvent. The results reveal the change in intensity of the painted panels in the following order $I_{ZnO\ Epoxy(50\%)} > I_{Epoxy}$ based pure pigment > I_{UF} based pure pigment > $I_{ZnO\ Epoxy(10\%)} > I_{ZnO\ UF(10\%)}$. These results reveal the potential of the pigment as one of the components of fluorescent paint.

1. Introduction

Since last few decades, luminescent materials evolved as important invention in the development of electronic devices. Researchers are in the path of progressive adoption of these novel and efficient luminescent organic materials that find applications in optical and electroluminescent devices [1]. The other part of these luminescent materials left much unexplored is their application as phosphor for luminescent paints. With the quest of promising candidates for formulating luminous paints, metal based quinoline derivatives [2–4] were found to be right candidates for this new-fangled application. 8-hydroxyquinoline (8 HQ) has been in use for versatile applications viz. emissive layer for organic light emitting diodes, as pigment for luminescent paints and even in various areas of medicine. In 8-HQ, quinoline group has strong tendency of forming coordination bond with metal ions, which makes these materials as good chelating agents [5–7]. The metal quinolates have excellent electrical conductivity, good charge carrier mobility and excellent stability under atmospheric conditions. Apart from this, they have excellent fluorescence and emission in the visible spectrum [8,9]. Different 8-hydroxyquinoline based metal complexes were studied for electroluminescent applications, in which various central metal atoms were chelated with 8-HQ [10–11]. Aluminum quinolato has been recognised as the good yellowish-green light emitting phosphor due to its good electron mobility with luminescent efficiency [12]. Tang and Van Slyke, the pioneers of OLED, has used the low weight π-conjugated molecule for OLEDs in 1987 [13–14]. It is convenient to synthesize and investigate metal quinolates and hence we propose a detailed investigations on Caq_2 pigment, synthesized by precipitation method, followed by formulation of luminescent paint by employing Caq_2 as pigment, epoxy and Urea formaldehyde as binders.

2. Synthesis

The procedure for synthesis of Caq_2 complex was adopted from literature methods [15]. 5 g of 8-Hydroxyquinoline was dissolved in a mixture of 25 ml acetic acid and water (99.9 %pure), the solution was rigorously stirred using magnetic stirrer until an orange solution was obtained. The $Ca(NO_3)_3{\cdot}6H_2O$ (99.9%) was separately dissolved in distilled water, stirred with the help of magnetic stirrer till clear solution was obtained. Later, both mixtures were added and the resultant suspension was stirred for 10 min. Aqueous Ammonia solution was added dropwise until a thick yellowish curdy precipitate was formed. The end product was kept for drying in hot air oven at 35°C for an hour. The powder was crushed using mortar and pestle so as to obtain fine particles

* Corresponding authors.
E-mail addresses: raikundliyaritesh19@gmail.com (R. Raikundliya), thejokalyaninallapareddy@gmail.com (N. Thejo Kalyani).

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MEMORY DEPENDENT RESPONSE IN AN INFINITELY LONG THERMOELASTIC SOLID CIRCULAR CYLINDER

N.K. Lamba[1], K.C. Deshmukh[2]

[1]Department of Mathematics, Shri Lemdeo Patil Mahavidyalaya, Mandhal, India
[2]Ex-Profesoor, Department of Mathematics, R.T.M. Nagpur University, Nagpur, India

О СТАТЬЕ

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Ключевые слова:

memory-dependent derivatives (MDD), solid circular cylinder, generalized thermoelasticity, laplace transform, thermal stresses.

АННОТАЦИЯ

Memory-dependent derivatives (MDD) have physical meaning, and compared to fractional derivatives, they are more suitable and convenient for temporal remodeling. In this study, the temperature and stress distributions in an infinitely extended generalized thermally elastic solid circular cylinder have been investigated by utilizing the concept of a memory-dependent heat conduction model. The homogeneous, isotropic, infinitely long solid circular cylinder is considered to have a lateral surface that is free of traction and is subjected to a known surrounding temperature. In the domain of the integral Laplace transform, the problem is worked out, and its complex inversion is performed numerically using the Fourier series expansion method. The material properties of copper metal are chosen for the purpose of numerical computation, and the thermoelastic impact of time delay on temperature distribution, displacement distribution, and thermal stresses are represented graphically. Also, time delay's effect on temperature history, displacement history, and thermal heat transfer stress history are shown, respectively. This study could also benefit mathematicians and researchers involved in the development of thermoelasticity, as it accounts for the memory-related derivatives that are useful in explaining the behaviour of a variety of physical processes. The thermal fluctuations captured by various factors with memory-dependent responses are used in engineering applications to realistically design machines or structures.

© **Dr. Kishor C. Deshmukh** – was working as Professor in the P.G. Department of Mathematics, R.T.M. Nagpur University, Nagpur, e-mail: kcdeshmukh2000@rediffmail.com, ID: 0000-0001-8291-9106
Dr. Navneet Kumar Lamba – is working as an assistant professor in the Department of Mathematics at Shri Lemdeo Patil Mahavidyalaya, Mandhal. He has received his M.Sc. and Ph.D. from R.T.M. Nagpur University, e-mail: navneetkumarlamba@gmail.com, ID: 0000-0002-6283-1681.

Shri Lemdeo Patil Mahavidyalaya SEAL Mandhal

Principal
Shri Lemdeo Patil Mahavidyalaya
Mandhal, Teh-Kuhi, Dist-Nagpur

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Behavioural Analysis of Infectious Diseases in Two Main Age Groups using a Mathematical Approach

N. K. Lamba
Department of Mathematics,
Shri Lemdeo Patil Mahavidyalaya, Mandhal
Nagpur

ABSTRACT

In this study, we modify the S-I-R-M model for two major age groups of the total population: the aged group (which includes old adults ranging from 60 and above) and the youth group (this comprises young adults aged 18 to 25 years old, adults aged 26 to 44 years old, and middle-aged individuals aged 45 to 59 years old) and discussed the frequency of infection, rapidity of healing, mortality, and susceptibility in the case of infectious diseases like plague, flu, cholera, coronavirus, etc. For the various parameters and functions, computations have been suggested and given graphically. The specific S-I-R-M model scenarios for both age groups have been discussed.

KEYWORDS: *Infectious diseases, Susceptible, Infective,recovery, Mortality Mathematical Modelling.*

INTRODUCTION

For many years, the whole world has faced so many pandemic and epidemic conditions due to the spread of infectious diseases like plague, flu, cholera, tuberculosis, malaria, coronavirus, etc. According to the data collected by the World Health Organization, people with a high risk of developing severe cases of infectious diseases are found to be over the age of 60, and the highest mortality rate is found in people over the age of 80. In addition to older age groups, young people with chronic illnesses including diabetes, high blood pressure, kidney disease, or cancer are at increased risk of contracting infectious infections. From the available literature survey, it is found that around 9 % of diabetic patients died after contracting the virus, which spreads infection in many diseases. Also, around 8 % of people are victims of high blood pressure. Hence, from the available data, we believed that the age distribution of the population plays a pivotal role in describing disease behaviour and characteristics. Now there is a need to study the impact of infectious diseases on the two major age groups, namely young (those who are below and equal to 60 years) and old (those who are above 60 years), across the globe. Consequently, in order to avoid and limit the spread of infections, recovery, and mortality in the above-mentioned age range, it is necessary to prepare a mathematical model category-wise due to the suitability conditions.

Morens et al. [1] state that many infectious illnesses, such as cholera, malaria, and tuberculosis, have spread across large geographic areas, posing health problems for a sizeable section of the population. Oliveira [2] suggested that infectious organisms, such as the variola virus and Yersinia pestis, have the potential to be utilized as bioweapons and pose a threat to civilization. The flea-borne bacteria Yersinia pestis, which caused the Black Death, the third plague, and the Justinian plague, was discussed by Zietz and Dunkelberg [3]. According to Faruque et al. [4], Vibrio cholerae causes the acute, frequently deadly disease of the gastrointestinal tract known as cholera. Three years ago, early December 2019 in the Chinese city of Wuhan saw a rapid rise in the reports of numerous inexplicable symptoms including cough, weariness, fever, and pneumonia [5, 6]. The pathogen of these cases was determined by the World Health Organisation (W.H.O.) and Chinese health officials to be a group of a new type of virus known as Coronavirus on January 10, 2020 [7]. Numerous researchers examined the coronavirus's transmission dynamics and came to sound conclusions [8, 9].

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Deflection Behaviour Due to the Response of the Caputo-Fabrizio Fractional Derivative in a Thermoelastic Disc with Heat Generation

N K Lamba
Department of Mathematics
S.L.P.M., Mandhal
Nagpur

Payal Hiranwar
Department of Mathematics
L.A.D. College
Nagpur

T T Gahane
Department of Mathematics
Late N.P.W. Sainiki Vidhalaya & Science College
Bhandara

ABSTRACT

Analytical analysis is performed to study the distortion produced by thermal variation in a fixed, clamped annular disc that is exposed to an internal source of heat. The bottom and top faces of the annular disc, as well as both its inner and external curved surfaces, maintain the boundaries of convective interchange of heat. The fundamental equation with the time fraction is solved using the analytical approach of integral transformation. The temperature and heat deviation measurements that were made are calculated numerically considering the material properties of a copper metal disc and are presented graphically.

KEYWORDS: *Annular disc, Caputo-Fabrizio, Fractional operator, Heat generation, Deflection, Temperature.*

INTRODUCTION

Since the last decade, the study of fractional order thermoelasticity has been in great demand due to its ability to predict the delayed response, which is important in many physical processes and applicable to real-world problems. Many researchers, engineers, mathematicians, and scientists are working hard to understand the exact phenomenon of physical observations occurring at the microscopic level and its application in developing structural designs. Using fractal theory, Povstenko [6] studied one- and two-dimensional temperature equations and discovered the stress functions. Povstenko [7] used spatiotemporal fractal derivatives and determined their influence on various solids. Youssef [8] considered a modified heat transfer equation and described a new thermoelastic theory with fractal parameters and proved its uniqueness. Povstenko [9, 10] determined the thermal stress distributions in a medium with infinite range by considering the effect of a radial heat conduction equation with a cylindrical cavity under fractal theory.

Ezzat [11] described the modelling of magneto-thermoelasticity by considering the concept of fractional approach. Ezzat [12] solved a 1D thermoelectric problem using the analytical transformation technique within the range of fractional elasticity. Ezzat and Ezzat [14] explained the applications of porous materials using fractional order thermoelasticity. In recent years, many other researchers [18, 20 and 21] have also made an important contribution to the study of thermal behaviour in the development of thermoelasticity. Shaikh et al [15] proved the existence and uniqueness criteria and discussed the effects of Caputo- Fabrizio reaction with nonlinear differential equations. Yepez and Gomez [16] determined the behaviour of the nonlinear fractional heat equation using the Caputo-Fabrizio operator. Amal

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Medicinal Perspectives: Synthetic and Characterization of 1, 2, 4-Triazole, 4-Oxidiazole and 4-Oxaazolidinones

Kushal R. Ianjewar [1], Mahesh K. Gaidhane[2], Ajay M Ghatole [3], Pravin K. Gaidhane[4], Meghasham N. Narule[5] and Kishor M. Hatzade[6]

[1] Mohsinbhai Zaweri Mahavidyalaya, Desaiganj, Wadsa, India,
[2]Department of Chemistry, Shri Lemdeo Patil Mahavidyalaya, Mandhal, India
[3] Department of Chemistry, J. M. Patel College, Bhandara, India
[4]Govindrao Wanjari Engineering and Technology, Hudkshwar Road, Nagpur, India
[5]Department of Chemistry, Vidya Vikas Arts, Commerce & Science College, Samudrapur, India.
[6]Department of Chemistry, Dhote Bandhu Science College, Gondia, India
Corresponding Author - Mahesh K. Gaidhane
Email: maheshgaidhane83@gmail.com
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Abstract

Triazole is an N-bridged aromatic heterocyclic compound that received a considerable attention in recent years. A practical method is developed for the synthesis of oxazolidinone derivatives, an important class of heterocyclic compounds. The effect of bases and solvents on this cyclization reaction is discussed and a simple new base–solvent system is found to be the most effective. The synthesis of medicinal perspectives of 2-substituted, 1,2,4-triazole (**4a-g**), 4- oxadiazole (**5a-g**) and 4-oxazolidinones (**6a-g**) starting from 3,5-dimethyl-2,4-diethoxy carbonyl pyrrole (1) are presented in this paper. The application Compound (**4e-g**), (**5e-g**) and (**6e-g**) show Anticancer, Antiproliferative and Antileishmanial when compared with standard drug. The structures of the compounds have been confirmed by IR, 1H NMR and Elemental analysis. The compounds **3a, 3c, 4g, 5f, 5g, 6b** and **6f** (possessing phenyl, 4-methyl, 2-chlorophenyl, 4-nitrophenyl and 3-nitrophenyl) have shown good antioxidant activity. Conclusion: Hence these compounds shall be exploited further for medicinal perspectives activities to attain a potential pharmacophore.

Keywords: Medicinal Perspectives, 1, 2, 4-Triazole, 4-Oxidiazole and 4- Oxaazolidinones

Introduction

Studies on heterocyclic compounds containing bridgehead nitrogen atom particularly those holding (1,2,4)-triazole, 4-oxidiazole and 4-oxaazolidinones derivatives have received much interest recently as they can be used in a variety of applications especially in the medicinal field. For example, many of 1,2,4-triazole rings are found into a wide range of pharmaceutical drugs including antimicrobial agents [1] [2] [3] [4], antifungal [5] [6], antibacterial [7] [8] [9] [10], antimycobacterial [11], antiviral [12] [13], anticancer [14], antitubercular [15] [16], antimycotic activity [17] [18], antimigraine agents, anti-inflammatory and analgesic [19] [20] [21], anticonvulsants [22], antinociceptive [23], anti-ureaese [24], antioxidant [25], CNS stimulants, and antidepressant [26], properties. Novel 1,2,4-Triazole Derivatives as Antimicrobial Agents via the Japp-Klingemann Reaction [27]. New Application of 1,2,4-Triazole Derivatives as Antitubercular Agents, In Vitro Screening and Docking Studies [28], 1,2,4-triazole rings possess not only diverse pharmacological activities [29] but also to have herbicidal, insecticidal, plant growth regulatory and antifungal activities [30]. Synthesis of N-substituted-4-methyleneoxazolidinones via base-catalyzed cyclization of propargylic alcohols with p-toluene sulfonyl isocyanate [31]. 1, 3, 4-Oxadiazole Derivatives: Synthesis, Characterization, Antimicrobial Potential and there Computational Studies [32], A convergent synthesis of 1,3,4-oxadiazoles from acyl hydrazides under semi aqueous conditions [33].

Derivatives of Pyrroles exhibit different important biological activities, like antibacterial, antioxidant, cytotoxic and insecticidal properties [34]. Several five membered heteroaromatic systems like 1, 2, 4-triazole, 4-oxadiazole and 4-oxazolidinones having three hetero atoms at symmetrical positions have been studied because of their interesting physiological properties [35]. In view of the above-mentioned pharmacological activities of pyrrole, 1, 2, 4-triazole, 4-oxidiazole and 4-oxaazolidinones, a number of the 2-substituted 3, 5-dimethy l-2, 4-diethoxycarbonyl pyrrole derivative has been synthesized containing above moieties.

Results and discussion

In view of the above-mentioned pharmacological activities of pyrrole, 1, 2, 4-triazole, 4-oxidiazole and 4-oxaazolidinones, a

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The Role of Audio Books and Video Books in English Language Teaching (ELT)

Sunil Dattatraya Alone

Assistant Professor of English

Shri Lemdeo Patil Mahavidyalaya

Mandhal, District: Nagpur, Maharashtra

Rashtrasant Tukadoji Maharaj Nagpur University,

Nagpur, Maharashtra, India

sunilalone26@gmail.com

Abstract

The integration of audio books and video books into English Language Teaching (ELT) has transformed traditional language learning methods. This research paper explores the evolving role of these multimedia resources in ELT, investigating their benefits, challenges, and pedagogical implications. Through an in-depth analysis of relevant literature, this study examines how audio books and video books enhance listening skills and comprehension, facilitate vocabulary acquisition, cultural immersion and contextual understanding, fosters motivation and engagement, caters to diverse learning styles, and provide authentic language exposure. Furthermore, the paper discusses effective pedagogical strategies for integrating these resources into ELT classrooms. By synthesizing theoretical insights and practical examples, this paper highlights the potential of audio books and video books to create immersive language learning experiences that bridge the gap between classroom instruction and real-world language use.

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The Role of National Service Scheme (NSS) and National Cadet Corps (NCC) in Nation Building

Sunil Dattatraya Alone
Assistant Professor of English,
Shri Lemdeo Patil Mahavidyalaya,
Mandhal, District: Nagpur (Maharashtra, India)
E-mail: sunilalone26@gmail.com

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Abstract:

This research article explores the significant role played by the National Service Scheme (NSS) and the National Cadet Corps (NCC) in the process of nation building in India. The NSS and NCC are two prominent youth-oriented organizations that have contributed extensively to the holistic development of young individuals while fostering a sense of citizenship, leadership, and social responsibility. Through a historical overview, this paper traces the origins and establishment of NSS and NCC in India. Subsequently, it delves into the multifaceted roles these organizations have assumed, including community service, leadership training, disaster management, and fostering national unity. The study employs a qualitative approach, drawing upon historical records, academic literature, and government publications. The findings underscore the transformative impact of NSS and NCC on participants, the society, and the nation at large. This article contends that by instilling values of discipline, social engagement, and patriotism, NSS and NCC have emerged as powerful instruments in shaping responsible citizens who actively contribute to the nation-building process.

Keywords: *National Service Scheme, NSS, National Cadet Corps, NCC, nation building, citizenship, leadership, social responsibility, community service, India.*

Introduction:

Nation building is a complex and continuous process that requires the active participation of all sections of society, particularly the youth. In the Indian context, the National Service Scheme (NSS) and the National Cadet Corps (NCC) have emerged as pivotal institutions that not only channel the energy and enthusiasm of the youth but also equip them with the skills and values necessary for nation building. This article aims to explore the origins, objectives, and contributions of NSS and NCC in shaping responsible citizens who contribute to the progress of the nation.

Origins and Establishment of NSS and NCC:

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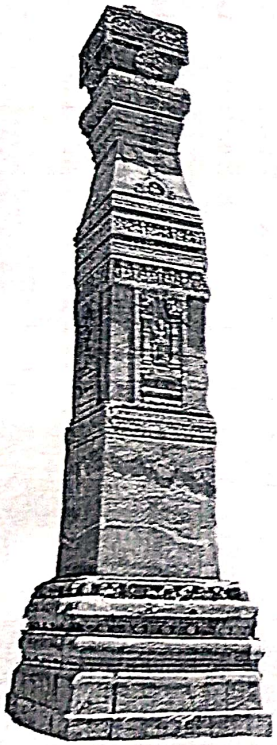

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Challenges in Teaching English as a Second Language to Rural Students in India

Sunil Dattatraya Alone, Assistant Professor Of English, Shri Lemdeo Patil Mahavidyalaya, Mandhal, District: Nagpur, Maharashtra
Rashtrasant Tukadoji Maharaj Nagpur University,
Nagpur, Maharashtra, 441210.India

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Abstract:

Teaching English as a Second Language (ESL) to rural students in India poses unique challenges stemming from diverse linguistic backgrounds, socio-economic disparities, and limited access to quality educational resources. This research paper examines the multifaceted obstacles faced by educators in this context. The paper highlights the significance of ESL education, discusses language barriers and their impact, delves into the role of socioeconomic factors, analyzes the dearth of effective teaching methodologies, and explores the potential of technology in mitigating these challenges. Through an extensive literature review, this paper provides insights into the strategies employed by educators, governments, and NGOs to address these issues. The findings emphasize the need for culturally sensitive pedagogical approaches, enhanced teacher training, and equitable distribution of resources. The research underscores the importance of addressing these challenges to bridge the rural-urban education gap and promote inclusive ESL education in India.

Keywords: language barriers, socioeconomic factors, teaching methodologies, pedagogical approaches, education gap.

Introduction:

English has gained prominence as a global lingua franca, playing a pivotal role in education, commerce, and social mobility. In India, English proficiency is often associated with better employment opportunities and increased social mobility.

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Mandhal. Tah.. Kuhi, Dist. Nagpur
(NAAC Accredited Institution)
WWW.lpmahavidyalaya.com
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