

Date: 14 & 15 /03/2021

Department of Chemistry

Departmental Activity

2022-23

Name of Activity: Skill Development

Name of the topic: "National Conference on Green Chemistry & Advanced materials." (GCAM-2023)

Guest: Prof. Dr. Manikrao M. Salunkhe (Presedent, Association of Indian Universities, INDIA)

(Ex. Vice Chancellor, Shivaji university, Kolhapur)

(Ex. Vice Chancellor, Bharati Vidyapeeth, Pune)

Prof. Dr. Sanjay K. Sharma (Prof. & Dean (R&D), JECRC University, Jaipur)

Prof. Dr. Vimal shrivastawa (Prof. & Head, Dept. of Chemical Engineering, IIT Roorkee)

Prof. Dr. B. B. Kale (Director, C-MET, Pune)

Index

Sr. No.	Documents	
1.	One page report of the Activity	
2.	Correspondence	
3.	Attendance	
4.	Feedback	
5.	Feedback analysis	

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Department of Chemistry Yashwantrao Chavan College of Science, Karad



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Yashwantrao Chavan College of Science. Karad

Yashwantrao Chavan College of Science, Karad		
NAAC Awareness Programme - Activity Report		
Name of Department: Chemistry	Date of activity : 14/03/2023 & 15/03/2023	
Name of the capability enhancement s	scheme : Skill development	
Guest: Prof. Dr. Manikrao M. Salunk	che, (President, Association of Indian Universities, India). (Ex. Vice Chancellor, Shivaji University, Kolhapur). (Ex. Vice Chancellor, Bharati Vidyapeeth, Pune).	
Prof. Dr. Sanjay K Sharma, (P	Prof. & Dean (R&D), JECRC University Jaipur).	
Prof. Dr. Vimal Shrivastawa, (Prof. & Head, Department of Chemical Engineering, IIT Roorkee).	
Prof. Dr. A. K. Satpati, (Scientis	t, Analytical Chemistry Division BARC, Mumbai).	
Prof. Dr. B B. Kale, (Director, C	C-MET, Pune).	
Name of the topic: National Conferen	ce on Green Chemistry & Advanced Materials (GCAM-2023).	
Purpose :	1. To aware students about green chemistry & advanced	
	materials.	
	2. To aware students about sustainable development	
	discuss issues and ideas relating to importance of advanced	
	materials in green chemistry.	
	4. To aware students about importance and benefits of	
4	advanced materials in pollution control.	
No. of beneficiaries :	300	
Class involved :	B. Sc. III, M.Sc. I & II	
Outcome/ success achieved :	1. Students aware for green chemistry and advanced	
	materials.	
	2. Students got some ideas how advanced materials can help	
	in sustainable development.	
Teachers/ Guest involved in the activi	ity Prin. Dr. S. B. Kengar	
	Prof. Dr. A. V. Mali	
	Dr. R. S. Patil	
	Dr. U. P. Lad	
	Dr. S. D. Jadhav	
	Mr. S. D. Karande	
	Dr. Mrs. M. B. Jagadale	
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Department of Chemistry Yashwantrao Chavan College of Science, Karad	Principal Yashwantrao Chavan Colleg of Science, Karad	

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Date: 14/03/2023

To,

Prof. Dr. Manikrao M. Salunkhe President, Association of Indian Universities, India. Ex. Vice Chancellor, Shivaji University, Kolhapur.

Subject-Letter of Appreciation

Respected Sir,

We are very much thankful for delivering lecture in guest lecture on in "National Conference on Green Chemistry & Advanced Materials" (GCAM-2023), which will be held on 14th & 15th March 2023 in Yashwantrao Chavan college of Science, Karad, Satara (Maharashtra). The lecture is very nice for our students and us.

We are very grateful for acceptance of our invitation and enlightening the occasion with excellent talk & presentation.

Thanks a lot.

Yours faithfully,





II Be One with the downtrodden and the underprivileged II Shri Shivaji Education Society Karad, Board For Higher Education's

SHWANTRAO CHAVAN COLLEGE OF SCIENCE, KARAI

Vidyanagar, KARAD - 415 124 Dist. Satara (Maharashtra) 20164 - 271356, 271357 Fax: 02164-271356, e-mail: prinyccsk@gmail.com

> Reacredited B⁺⁺ Level by NAAC, Bangalore AN ISO 9001-2015 CERTIFIED COLLEGE REG. NO. : RQ91/5237

Date: 03/03/2023

Letter of invitation

To,

Prof. Dr. Manikrao M. Salunkhe President, Association of Indian Universities, India. Ex. Vice Chancellor, Shivaji University, Kolhapur.

Subject- Invitation as a Chief Guest for National E Conference

With respect to the subject mentioned above we invite you as chief guest in "National Conference on Green Chemistry & Advanced Materials" (GCAM-2023), which will be held on 14th & 15th March 2023 at 09.00 am in Yashwantrao Chavan college of Science, Karad, Satara (Maharashtra) via online mode. We welcome you to join us and share your knowledge and the views on advance theme of Green Chemistry & Advanced Materials.

We believe this conference will be highly rewarding educational and networking experience to all.

I once again request you herewith to accept our invitation.

Thanking you,

Yours faithfully,

Department of Chemistry

Yashwantrao Chavan College of Science, Karad





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To,

Prof. Dr. Sanjay K. Sharma Prof. & Dean (R&D), JECRC University Jaipur.

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Date: 03/03/2023

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To,

Prof. Dr. A. K. Satpati Scientist, Analytical Chemistry Division, BARC, Mumbai.

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"GREEN CHEMISTRY & ADVANCED MATERIALS"



14th &15th March 2023 ORGANIZED BY DEPARTMENT OF Chemisty and IQAC

* Feed Back Form *

- 1) Name of the Participant Dange profiksha Kumar
- 2) College/Institute/Industry Rajatambapu college of pharmacy, Kasegaon.

3) Designation <u>Student</u>

- 7) E-mailid protikshadange 245 @ gmail. com
- 8) Mobile No. 9545127624

Please respond to each of the following questions, they are intended to allow u to improve specifics of the workshop. Take your time in order to provide us with the most accurate assessment of your experience.

Instruction : Please Tick Mark within the box

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ON **"GREEN CHEMISTRY & ADVANCED MATERIALS"**



14th &15th March 2023 ORGANIZED BY DEPARTMENT OF Chemisty and IQAC

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1)	1) Name of the Participant	Ramugade	Priyanka	Prakash	
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2) College/Institute/Industry Regarambaper college of pharmacy, kasegown

3) Designation Student

7) E-mailid priyankaramugade 4 @ gmail. Com

8) Mobile No. <u>9049448055</u>

Please respond to each of the following questions, they are intended to allow u to improve specifics of the workshop. Take your time in order to provide us with the most accurate assessment of your experience. Instruction : Please Tick Mark within the box

	Questions	Excellent	Good	Satisfactroy
1.	The overall arrangement			
2.	Subject matter of the Conference			
3.	Applicability of the topic in Research			
4.	Effectiveness of the Conference			-
5.	The Conference content was challenging			
6.	Overall Discussion with the speakers			
7.	Speech of Resource Persons			





ON "GREEN CHEMISTRY & ADVANCED MATERIALS"



14th &15th March 2023 ORGANIZED BY DEPARTMENT OF Chemisty and IQAC

* Feed Back Form *

1) Name of the Participant <u>Pooja Shashikant Haware</u>.

2) College/Institute/Industry Y. C. college of science, karad

3) Designation _ 8+udent

- 7) E-mailid <u>Poojahaware2000 agmail.com</u>
- 8) Mobile No. <u>7499967113</u>

Please respond to each of the following questions, they are intended to allow u to improve specifics of the workshop. Take your time in order to provide us with the most accurate assessment of your experience.

Instruction : Please Tick Mark within the box

Questions	Excellent	Good	Satisfactroy
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2. Subject matter of the Conference	\checkmark		
3. Applicability of the topic in Research	\checkmark		
4. Effectiveness of the Conference			
5. The Conference content was challenging		~	
6. Overall Discussion with the speakers	\checkmark		
7. Speech of Resource Persons		V	



Signature of the Participant

ON **"GREEN CHEMISTRY & ADVANCED MATERIALS"**



14th &15th March 2023 ORGANIZED BY **DEPARTMENT OF Chemisty and IQAC**

* Feed Back Form *

Fawar ali ana 1) Name of the Participant College / Institute / Industry <u>Y. C.</u> C.S Karced 2) 51 uden Designation 3) Deworrasika 886 @ gmail. Com 7) E-mailid

932501996 8) Mobile No.

Please respond to each of the following questions, they are intended to allow u to improve specifics of the workshop. Take your time in order to provide us with the most accurate assessment of your experience.

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Questions	Excellent	Good	Satisfactroy
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Signature of the Participant

ON "GREEN CHEMISTRY & ADVANCED MATERIALS"



14th &15th March 2023 ORGANIZED BY DEPARTMENT OF Chemisty and IQAC

* Feed Back Form *

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- 2) College/Institute/Industry Yashwantrao Chavan college of Science Karad
- 3) Designation

7) E-mailid jagtapvaishanvit @qmail.com

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8) Mobile No. 915831705

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Questions	Excellent	Good	Satisfactroy
1. The overall arrangement			
2. Subject matter of the Conference	V		
3. Applicability of the topic in Research	V		
4. Effectiveness of the Conference			
5. The Conference content was challenging	V		
6. Overall Discussion with the speakers	V		
7. Speech of Resource Persons			



Signature of the Participant

Feedback Analysis

Name of the activity: National Conference on Green Chemistry & Advanced Materials (GCAM-2023).



	Date: / / 20		}
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<u>م</u>	Sartape	Balwant College, VIIa	
_4	Dr. Sanadi K.R.	Doodhsakhar Maridyalaya, Bidri Tal-Kagal Dist - Kolhapur	
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6	Sunil Bapurao Zanje		
7 *	Krishna N. A Alsundkar		
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36.	Dr. S. t. Mana-Garale		
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37.	Mr. R. D. Tasgaonkar	Jaysimmur College tarsing	a v
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39. Chopdar Supriya Vijay	Yashwantrao Chavan College of Science Karad
40.) Jadhav Priyanka Mahadev	Yashwantrao Chavan College of Science karad
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42 Mohite Tejäshri Tanaji	Yashwantro chavan colloge of i science karad
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100	Mali Priyanka Dipak	Yccsk.	
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(103) 4142	Patel Serbil Rafik	YCCSK	5
(04) 4130	Madane Proshant Rajaram	YCCSK	
105	Jadhav Shraddha Rajaram	YCCSK	
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(18) Mali Progati Bhimae	Y.C.C.Ste. Gravan College
(19) Bhise Savita Baban	Y.C.C.S.K.

Mob. No. Class subject & email Sign Amount Analytice M. SC-IT chemistry 7378721403 Pratikb881@9mail.com 3001 Analytical M.SL-I 8554852708 hamleshgungunde 491999 @gmail.cen (Finil) sde chemistry 3001 Analytical dastugirmull71@gmail.con 3001 9373018078 Misc. II Chemistry Reparchk 11+2, 9322965 \$ 808 300 Miczobiolog Eginandinipodi soz7 Ognil M.SC.I Eginandi 9423278027 3001 com. online 18.2 Pratikshammagadem@gmei M.Sc.t 3001 9545665188 12 Com onling M'SC-IL Microbiology 7758955105 300 hangader ushikerh 1607@ gmall.com Bpharm vpatil3313Qgmail. 3001 Uspa 9604326038 TV. Huhne 9284486505 milujatupe77@9 M-SC-II Micropiolo 3000 81 mailton MSCI Microbiology Russ 7499967113 poojahawyrezood 30.0 ggmuil.com abioluq 7057502 98 . pragatimzozolaganai Pamati 300/1-CHEMISTRY · Com MS ( Kargeren biology 7066698095 Souitablise 01020 3001 SPhig. gmail.com (10)

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## Souvenir

Two Days National Conference on Green Chemistry and Advanced Materials (GCAM-2023) 14th and 15th March 2023



Organized by Department of Chemistry & IQAC Yashwantrao Chavan College of Science, Karad

Principal

Dr. Suryakant Kengar Yashwantrao Chavan College of Science, Karad E-mail : prinyccsk@gmail.com Website : www.yccskarad.com

Yashwantrao Chavan College of Science, Karad-415 124



# **Our Inspiration**



Hon. Shri. Yashwantrao Chavan Saheb First Chief Minister of Maharashtra Founder of Shri Shivaji Education Society's, Board for Higher Education, Karad

Yashwantrao Chavan College of Science, Karad-415 124



# **Our Motivator**



# Hon. Shri. P. D. Patil Saheb

Former Chairman of Shri Shivaji Education Society's,

## **Board for Higher Education, Karad**

Yashwantrao Chavan College of Science, Karad-415 124



## **Organizing Committee**

**Chief Patron** 

Hon. Balasaheb Pandurang Patil

Member of Legislative Assembly of Maharashtra (Karad North) Former Minister of Co-operation & Marketing, Govt. of Maharashtra President, Shri Shivaji Education Society's, Board for Higher Education, Karad

**Patrons** Hon. Altafhusen Nasruddin Mulla General Secretary Hon. Dr. Ashokrao Shankarrao Dubal Hon. Prakash Pandurang Patil Hon. Nandkumar Laxmanrao Batane Hon. Arun Pandurang Patil Hon. Bhaskarrao Dattatray Kulkarni Hon. Diliprao Dadasaheb Chavan Chairman Principal Dr. S. B. Kengar Convener Prof. (Dr.) S. H. Burungale Professor & Head, Department of Chemistry **Organizing Secretary** Prof. Lt. (Dr.) A. V. Mali Dr. U. P. Lad Co - ordinators Dr. R. S. Patil Dr. S. D. Jadhav **IOAC Co-ordinator** Dr. G. G. Potdar Treasurer Mr. A. N. Bhingare Mr. G. B. Dhake Members Dr. B. E. Mahadik Mr. S. D. Karande Dr. M. B. Jagadale

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**Prof. (Dr.) K. D. Sonawane** Head, Department of Chemistry, Shivaji University, Kolhapur

**Prof. (Dr.) S. S. Kolekar** Department of Chemistry, Shivaji University, Kolhapur

**Prof. Dr. K. M. Gardakar** Department of Chemistry, Shivaji University, Kolhapur.

**Prof. Dr. S. D. Delekar** Department of Chemistry, Shivaji University, Kolhapur.

> **Dr. Sanjay Patil** BARC, Mumbai

Dr. S. S. Patil Principal, Raje Ramrao College, Jath.

Mr. C. Y. Chavan Head Department of Chemistry, Krishna Mahavidyalaya, Rethare BK.

> **Prof. (Dr.) R. K. Mane** Head Department of Chemistry, KRP College, Islampur

**Prof. (Dr.) V. A. Kalantre** Head Department of Chemistry, Balasaheb Desai College, Patan

**Dr. B. M. Sargar,** Head, Department of Chemistry, Jaysingpur College, Jaysingpur.

Mr. D. G. Kalekar Head, Department of Chemistry, Raja Shripatrao Bhagwantrao Mahavidyalaya, Aundh.

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# Local Advisory Committee

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# All Teaching & Non-Teaching Staff Yashwantrao Chavan College of Science, Karad.



Yashwantrao Chavan College of Science, Karad-415 124



I am happy to know that the Department of Chemistry Yashwantrao Chavan College of Science, Karad is organizing the national conference on "Green Chemistry and Advanced Materials" on 14th and 15th March 2023.

I am very proud to state that Department of Chemistry always selects an innovative theme for conferences. I hearty congratulate them for them for their efforts. The theme of conference is highly relevant and of national importance. The conference aims at adopting interdisciplinary approach and innovative ideas. The national conference will bring all the scientists and research scholars together to discuss on certain national important issues. I congratulate principal, staff and students of the college for organizing this national conference.

I wish every success for the conference.

## Hon. Balasaheb Pandurang Patil Saheb

Member of Legislative Assembly of Maharashtra (Karad North), Former Minister of Co-operation & Marketing, Govt. of Maharashtra, President, Shri Shivaji Education Society's, Board for Higher Education, Karad.

Yashwantrao Chavan College of Science, Karad-415 124





I am very glad to know that Yashwantrao Chavan College of Science, Karad organizing National conference on "Green Chemistry and Advanced Materials" on 13th and 14th March 2023. Department of Chemistry from this college is the largest and leading in the orbit of Shivaji University. You have really appreciated the present need of 21st century in the sense of innovative ideas in the field of Science. In these two days we expect exchange of ideas and amongst scholars and young inventors. I hope, with this interaction you will definitely capture young scientist from this conference.

I convey my best wishes on behalf of Shri Shivaji Education Society, Karad, Board for Higher Education's, Karad and on behalf of my college for grand success of the National conference.

#### Hon. Altafhusen Nasruddin Mulla

General Secratory, Shri Shivaji Education Society, Karad. Board for Higher Education's, Karad

Yashwantrao Chavan College of Science, Karad-415 124





I am happy to know that **Yashwantrao Chavan College of Science, Karad** is organizing National conference on "**Green Chemistry and Advanced Materials**" during 13-14 March 2023. The conference is covering broad spectrum of topics right from Green Chemistry to Material science. I am sure that this conference will be successful in providing a common platform to all participants working in various fields. This will also give an opportunity to interact and enrich latest developments in the field of Chemistry.

I appreciate the efforts taken by faculty of Chemistry Department, Yashwantrao Chavan College of Science, Karad in organizing this conference. My best wishes for the National Conference "Green Chemistry and Advanced Materials".

## Hon. Prakash Pandurang Patil Former General Secratory,

Shri Shivaji Education Society, Karad. Board for Higher Education's, Karad

## Yashwantrao Chavan College of Science, Karad-415 124

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### MESSAGE

I am indeed very happy to offer welcome you all for this event of two days national Conference on "Green Chemistry and Advanced Materials" organized by Department of Chemistry during 13th and 14th March 2023." For us it is great privilege and honor to have opportunity for organizing National conference. The conference's theme is really multidisciplinary and it has the potential to have a significant societal influence.

We will take initiative in organizing such conference by realizing the significance of exchange of intellectual and scholarly thoughts and ideas that will interchange at such conferences.

In 21st century, there shouldn't be barriers between specialization and superspecialization such barriers between branches should be removed spontaneously for best flow of knowledge to develop innovative approach. I sincerely hope that you will enjoy the conference key hole, plenary speeches, invited talks, oral and

#### Yashwantrao Chavan College of Science, Karad-415 124



poster presentations. I must thank Advisory committee for their guidance and local organizing Committee for their sincere efforts to organize such a scientific event.

I take this opportunity to wish one and all a very interesting time during the conference.

## Dr. S. B. Kengar,

Principal, Yashwantrao Chavan College of Science,

Karad.



Yashwantrao Chavan College of Science, Karad-415 124



It gives me immense pleasure to welcome all the dignitaries, eminent resource persons and participants in the National Conference on "Green Chemistry and Advanced Materials" organized by Department of Chemistry during 14 & 15 December 2023.

The conference is aimed at bringing together eminent experts to give broad perspectives in the field of Chemical Sciences. It will impart an innovative knowledge about the advanced information of scientific research and recent development in technology to the participants. The topic for the deliberation for this conference transcends the borders of conventional and non-conventional chemistry and enters in the spheres of Green technology, nanomaterials, medicines, drugs, etc. We look forward to fruitful deliberations in interesting areas of scientific research.

At present our department is one of the premier & leading department in Shivaji University, Kolhapur at UG level. It was established in year 1958 as a part of science faculty of Yashwantrao Chavan College of Science, Karad under the Vashwantrae Chavan College of Science Karad 415 124

Yashwantrao Chavan College of Science, Karad-415 124



ableguidance of Late Hon"ble Yashwantrao Chavan. Our department presently run UG, PG and Ph. D courses. Now, 250 students doing their B. Sc course, 88 students for their M.Sc. course. While 04 students are doing their Ph. D course under the guidance of me.

The department has well equipped and highly sophisticated laboratories, departmental books & CD''s library facilities for students & staff. There are 14 well qualified and experienced faculty members imparting quality education. Majority of them have been engaged in research work, project and publishing research papers in National & International journals. Besides teaching learning programme other activities like National, State level conferences, Seminars, Project work, ACT test, M.sc Entrance Coaching, Remedial teaching, Certificate courses, Guest lectures of eminent personalities are conducted continuously and successfully.

Our department offers placement services to graduate and post graduate students. Most of our alumini are holding responsible positions in various dignified areas. The most heartening feature of the conference is that it is being participated with a number of young scientist and Ph.D. students while presentations are schedules in oral and poster sessions. We are looking to the galaxy of the sparks and young participants who made this conference a memorable event. We expand our warm welcome to all deligates from Industries, Research organization and academic institutes. I wish them very happy stay in Karad.

Dr. S. H. Burungale Convener, Head, Department of Chemistry

### Yashwantrao Chavan College of Science, Karad-415 124





It gives me a great pleasure to know that the Department of Chemistry, Yashwantrao Chavan College of Science, Karad is organizing National Conference on "Green Chemistry and Advanced Materials" on 13th and 14th March 2023. Chemistry plays an important role in everyday life of an individual and chemical science has a major share in the overall economic development of the country. The present conference is a combination of chemical and allied sciences to confront the new challenges faced by the human population like pollution and energy crisis. I am sure that such activities will bring about fruitful discussions and interaction between the established national level scientists from various Institutes and the young researchers in the thurst areas of conference.

I convey my best wishes for the success of the conference.

Prof. (Dr.) Manikrao M. Salunkhe,

President, Association of Indian University (AIU), India Ex. Vice Chancellor, Shivaji University, Kolhapur Ex. Vice Chancellor, Bharati Vidyapeeth, Pune

### Yashwantrao Chavan College of Science, Karad-415 124



## NATIONAL CONFERENCE

### ON

# GREEN CHEMISTRY AND ADVANCED MATERIALS

## **PROGRAMME SCHEDULE**

Day -1 Date: 14 March 2023

8.00 am - 9.30 am	Registration Tea & Breakfast	
	Plenary session I : Ope	ening Ceremony
9.30 - 11.00	Inauguration function	
	Inaugural address	Chief Guest 1 Prof. Dr. M. M. Salunkhe
11.00-12.00	Keynote address	Chief Guest 2 Dr. Dipak Vitthal Pinjari
12.00-1.00	Explanatory speech	Chief Guest 3 Sanjay K. Sharma
	Lunch break (1	.00-2.00)
	Plenary session II: Or	al presentations
(	Oral presentations	
2.00-3.00	(Four participants each	Chairman 4
	15 min)	
		Member 5
	Oral presentations	
3.00-4.00	(Four participants each	Chairman 6
	15 min)	
		Member 7
	Tea break (4.	00-4.30)
	Plenary session III: Pos	ster presentations
4.30-6.30	Poster presentations	Chairman 8
		Member 9
		Member (Ladies)10
	Dinner (7.30-0	nwards)

Yashwantrao Chavan College of Science, Karad-415 124



## NATIONAL CONFERENCE

#### ON

## GREEN CHEMISTRY AND ADVANCED MATERIALS PROGRAMME SCHEDULE

Day -2 Date: 15 March 2023

	Tea & Breakfast (8.00 am - 9.30 am)				
	Plenary session I : H	onorary speech			
0.20 10.20	Informative speech-	Chief Guest 11			
9.30 - 10.30	Industry	Vimal Chandra Srivastava			
10 20 11 20	Persuasive speech-	Chief Guest 12			
10.30-11.30	Industry	A. K. Satpati			
11 20 12 20	Demonstrative speech-	Chief Guest 13			
11.30-12.30	Research	Dr. R. B. Pawar			
	Lunch break (	1.00-2.00)			
	Plenary session II: On	cal presentations			
	Oral presentations				
2.00-3.00	(Four participants each	Chairman 14			
	15 min)				
		Member 15			
	Oral presentations				
3.00-4.00	(Four participants each	Chairman 16			
	15 min)				
		Member 17			
	Tea break (4.	00-4.30)			
	Plenary session III: Va	ledictory function			
4.30-6.00	Function				
	Concluding speech	Chief Guest 18 Dr. R. B. Pawar			
	Certificate issue				

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## **Esteemed Speakers**

Prof. (Dr.) Manikrao M. Salunkhe,

President, Association of Indian University (AIU), India Ex. Vice Chancellor, Shivaji University, Kolhapur Ex. Vice Chancellor, Bharati Vidyapeeth, Pune

Prof. (Dr.) Sanjay K. Sharma,

Professor & Dean (R&D), JECRC University, Jaipur

## Prof. (Dr.) Vimal Shrivastawa,

Professor & Head, Dept. of Chemical Engineering, IIT Roorkee

## Prof. (Dr.) A. K. Satpati,

Scientist, Analytical Chemistry Division, BARC, Mumbai.

## Prof. (Dr.) B. B. Kale,

Director, C-MET, Pune

## Prof. Dr. P. S. Patil,

Pro Vice Chancellor, Shivaji University, Kolhapur.

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#### **Recent Developments in Green Chemistry and Advanced Materials**

#### Dr. Dipak Vitthal Pinjari

Associate Professor and Associate Dean Institute of Chemical Technology, Mumbai Email: dv.pinjari@ictmumbai.edu.in

#### Abstract

Advanced Materials are the definite answer to a digital world that is focused on becoming compact, sustainable and more efficient. They are providing superior strength and excellent performance compare to conventional material. It also helps us to clean up the world's bigger and more important problems, contributing significantly to the environment and climate protection by saving energy, raw materials, water and reducing greenhouse gasses and hazardous wastes. These engineered materials can increase the durability of the materials that they last longer and reduce waste. Nanotechnology relates closely to the advanced materials and having tremendous potential to positively affect the planet and human beings. It leads to faster, smaller, smarter and more portable systems and products. Nanomaterials, an outcome of nanotechnology, are small, fast and super bendy, hence they have a wide range of applications. Green Chemistry is another field which help to design the materials by adopting greener routes. They are having capability to eliminate use of hazardous chemicals and reduce waste while engineering advanced materials. Green chemistry and green engineering are the pillars of the green nanomaterials. By keeping a greener approach towards the synthesis of nanomaterial, green nanomaterials are introduced. Green nanomaterials find its applications in various sectors. Green Chemistry and advanced materials contribute efficiently to create greener future.

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## Indian Knowledge System: The Roots of environmental sustainability, civilization and Green Chemistry

Sanjay K. Sharma, FRSC

Green Chemistry & Sustainability Research Group, Department of Chemistry, JECRC University, Jaipur 303 905, Rajasthan, India E-mail: <u>drsannjaysharma@gmail.com</u>

#### Abstract

In ancient India, amazingly detailed information is available on the existence, exploration and innovation of - chemicals, metals, glass, dyes, cosmetics, perfumery, and herbal medicines through various methods and processes which were collectively called Rasayan Shastra, Rastantra, Raskriya or Rasvidya. The eminent Indian chemist of the last century and a historian of chemistry, Acharya Prafulla Chandra Ray stated five stages in the development of chemistry as (i) the pre-Vedic stage upto 1500 BC, including the *Harappan* period, (ii) the *Vedic* and the Ayurvedic period upto 700 CE, (iii) the transitional period from 700 CE to 1100 CE, (iv) the Tantric period from 700 CE to 1300 CE, and (v) the 'latro-Chemical period' from 1300 CE to 1600 CE. The concept of 'Green Chemistry' was introduced in the late 90s which is 'the design, development, and implementation of chemical products and processes to reduce or eliminate the use of substances hazardous to human health and the environment', which advocates for the sustainability of environment and earth. In Indian scriptures, we can easily find that the principles of sustainability were deeply rooted and practiced in the Vedic, Jain, Buddhist, and Kautilya's Arthshashtra era. The ancient Indian literature clearly suggests the existence of ecological sustainability which is replicated in

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many modern holistic methods. Thus, the concept of green chemistry is not new in the Indian context.

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#### Sustainability perspectives in future energy and environmental research

#### Vimal Chandra Srivastava

Dean, International Relations G B Pant Institute Chair Professor, Department of Chemical Engineering Joint Faculty, Centre of Nanotechnology Indian Institute of Technology Roorkee Roorkee - 247667, Uttarakhand, India. E-mails: vimal.srivastava@ch.iitr.ac.in, <u>vimalcsr@yahoo.co.in</u>

#### Abstract

India is the fourth largest energy consumer, behind only the US, China and Russia. In spite of this, its' per capita electricity consumption is very poor, 1,000 kilo watt hour (kWh) (in 2014-15), while developed countries average around 15,000 kWh. The Government of India is focused on a promising clean energy, therefore, economic activities based on renewable sources of energy such as hydrogen, hydro, solar, wind energy, alternative chemicals, and other related activities should be emphasized.

The industrial and municipal solid waste management is becoming an area of growing concern for the governments. Industries including pulp and paper mills, distilleries, textile, refineries, sugar, pharmaceuticals, etc. are highly polluting industries with generation of large amount of wastewater. The research on 'waste to energy' serves dual purpose; it cleans organic matters through its thermal, microbial and catalytic oxidation; and in that process it also augments the "SWACHH BHARAT" mission of the government. Various waste-to-energy technologies like gasification/thermal treatment of industrial and municipal solid waste; aerobic, anaerobic and advanced oxidation including supercritical, catalytic

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thermolysis, catalytic oxidation, wet-air oxidation, coagulation, electro-coagulation based technologies for treatment of industrial and domestic wastewater; microbial fuel cell, etc. will be highly helpful in solving waste disposal problems and energy requirements.

For last few years, bioenergy production through biomass and algal route has attracted worldwide attention because of its portability of uses of diverse feedstock as the growth media. Solar energy has the potential for decreasing the dependability on fossil fuels, in particular, in the remote area. The areas of research are mainly focused on energy conversion using flexible solar cells (organic & perovskite solar cells), oxide based solar cells; integration of solar cells and solar potential prediction and estimation. To improve the usage of installed capacity, storage of energy is essential because renewable energy received from above sources is not perpetual and therefore coupling with energy storage devices is only a solution. Therefore, it is very much essential to develop energy storage devices. In addition, hydrogen energy, clean coal technology, carbon capture and storage, carbon dioxide sequestration and conversion to value-added products, life cycle assessment of sustainable energy technologies, application of artificial intelligence in the sustainable energy cycle, etc. are major areas of research.

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## Nano Composite electrodes and their characterisations in energy harvesting, storage and sensing applications

### A. K. Satpati

Analytical Chemistry Division, Bhabha Atomic Research Centre, Trombay, Mumbai 400085, India Homi Bhabha National Institute, Anushaktinagar, Mumbai 400094, India E-mail: <u>asatpati@barc.gov.in</u> and aksatpati@gmail.com

#### Abstract

The electrode/electrolyte interfaces of the nano composite electrodes are complex and the investigations of such complex processes are important in developing catalysts substrates for energy harvesting and storage, development of sensors and gas storing devices and investigating the interactions of drugs and biomolecules. The interfacial processes have been investigated for noble metal doped 3Dgrapehe, metal organic framework derived Ni-Co oxide, MoS₂ MoS₂/C-dots composite for their electrocatalytic and supercapacitor properties. Photoelectrochemical (PEC) investigations are carried out for splitting of water using solar radiation on BiVO₄ and its modifications through doping and hetero junction formation. Modification of the interface has generated interesting properties. Electrochemical and photochemical techniques are utilised to probe the charge transfer processes of the modified interfaces. Scanning electrochemical microscope has been utilised to obtain the hole transfer kinetics for the PEC water splitting and to image the interfacial processes, some such investigations are shown in Figure 1.^[1-4] The modified substrates like, Mn oxide, Mn ferrite, rGO, 3Dgraphene, AuNPs modified substrates are developed for supercapacitor and also for

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the electrochemical investigation and interaction of ciprofloxacin, dopamine, uric acid, nitrite, nitrate, 6-mercaptopurin, cysteine etc.

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### GCAM-2023

## • OP-1: Facile green synthesis of Pd NPs-rGO for electrooxidation alcohols

Nagesh D. Pawar, Jagdish C. Bhangoji, and Suresh S. Shendage*^a

^aDept. Of Chemistry, KET'S V. G. Vaze Kelkar College, Mithagar Road, Mulund (E), Mumbai-400081, Maharashtra (India).

^bDept. Of Botany, KET'S V. G. Vaze Kelkar College, Mithagar Road, Mulund (E), Mumbai-400081, Maharashtra (India).

*Corresponding author:sendtonagesh@gmail.com, sureshsshendage@gmail.com

**Abstract:** Facile green synthesis of PdNPs on graphene support using L-ascorbic acid as reducing agent is reported for electrooxidation of alcohols. The synthesized nanocomposite material was characterized by XRD, SEM, and TEM. The morphological examination showed cubical PdNPs well dispersed on graphene support with mean diameter 25 nm with particle size ranges from 14-87 nm for Pd@rGO. The electrocatalytic activity was investigated by cyclic voltammetry and chronoamperometry techniques. The Pd@rGO exhibits excellent catalytic activity as well as long term stability for ethanol and methanol electro-oxidation in alkaline medium as compared to commercial Pd@C catalyst at room temperature. The prepared catalyst showed high activity and stability towards ethanol and methanol electrooxidation in alkaline medium.

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OP-02: Design, molecular docking studies, *in-silico* ADME prediction and synthesis of some novel N-substituted 1,3,4-oxadiazole carbamothioyl derivatives with it's antimalarial, anticancer screening and QSAR study

<u>Akshay R. Yadav</u>*, Dr. Atul R. Chopade, Dr. Shrinivas K. Mohite, Dr. Chandrakant S. Magdum Rajarambapu College of Pharmacy, Kasegaon, Sangli, Maharashtra- 415110 Email: akshayyadav24197@gmail.com

Abstract: Molecular docking results highlight that fact that the compounds (3h, 3j and 3n) exhibited good docking scores and could be considered as possible hit as therapeutic agents. In addition, in-silico ADMET analysis was done to predict the ADMET properties. It was intresting to note that SwissADME results coherence with final result of the compounds which have pharmacological activity means compounds confirmed to be drug-like molecules. Series of Novel N-Substituted 1,3,4-Oxadiazole carbamothioyl derivatives (3a-t) were synthesized by green chemistry approach. Synthesized compounds (3h, 3j and 3n) were characterized using IR, NMR and Mass spectroscopy. As Brine shrimp lethality assay that may prove quite helpful as a preliminary screen to determine toxic properties. Compounds produced dose dependent cytotoxicity effect to brine shrimp nauplii. These compounds show promising anticancer and antimalarial agents. A significant correlation was observed between the in-silico studies and the pharmacological activity. The anticancer activity results was correlated with their physiochemical and structural properties by QSAR analysis using PLS advanced method. The selected model of 3D QSAR showed correlation of descriptors with

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anticancer activity. The resulting model exhibited  $good q^2$  and  $r^2$  values respectively.

**Keywords:** 1,3,4-Oxadiazole, Molecular docking, *In-silico* ADME, Brine shrimp lethality assay, Anticancer activity, Antimalarial activity, 3D QSAR

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## OP-03: Amino functionalized mesoporous silica as nanoadsorbents for removal of toxic Cr (VI) ions from water

Harshada B Garud¹, Sushilkumar A. Jadhav^{2.*}, Shivaji H. Burungale^{3,*}, Vilas A.

Kalantre¹

¹Balasaheb Desai College, Patan, Maharashtra, India ²School of Nanoscience and Technology, Maharashtra, India ³Yashwantrao Chavan College of Science, Karad, Maharashtra, India *Corresponding Author: sushil.unige@gmail.com, shivajiburungale777@gmail.com

Abstract: In this research, synthesis of amino-functionalized mesoporous silica nanoparticles (MSNs) were carried out. The porous amino functional ( $pSiO_2-NH_2$ ) nanoparticles were completely characterized by transmission electron microscopy (TEM), X-ray diffraction (XRD) Attenuated total reflection Fourier transform infrared spectroscopy (ATR-FTIR), and nitrogen adsorption-desorption (BET) analyses. The size of the particles was in the range of 80-200 nm with a specific surface area (SSA) of 721 m² g⁻¹, and the pore diameter was 3.1 nm. The pSiO₂-NH₂ nanoparticles were tested for their efficiency in removing Cr (VI) ions from water. Practically quantitative removal of the particles was accomplished by using the particles just within two hours. The adsorption efficiency of the particles was around 50 mg g⁻¹. The porous silica particles can be repeatedly used as nano adsorbents for the adsorption removal of Cr (VI) ions from water. The nanoparticles can also be potentially used for selective capture, removal, and recovery of other different toxic metal ions from water.

Keywords: Mesoporous silica; functionalization; adsorption; pollutant removal.

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## OP-04: Isolation and Characterization of Lead (Pb) Resistant Bacterial potential for bioremediation of contaminated soil

<u>Abhay B. Patil</u> and Jaysing U. Patil*

Department of Microbiology, Yashwantrao Chavan College of Science, Karad **Email:** abhaybajiraopatil@gmailcom

Abstract: Nowdays environment is being continuously polluted with toxic heavy metals that are spreading throughout the world along with industrial progress. Microorganisms can be highly efficient bioaccumulators of soluble and particulate forms of metals. Use of microbes for the bioremediation of heavy metals may provide an alternative or addition to conventional method of metal removal. The present study deals with isolation and characterization of lead resistant bacteria from heavy metal contaminated soil in the area of taswade MIDC followed by study of tolerance and bioremediation. Three different strains were isolated from soil sample. Minimum inhibitory concentration was shown against the lead nitrate at different levels. The higher MIC was observed at a concentration of 150  $\mu$ g/ml of lead nitrate. Quantification of lead (Pb) metal absorption was determined by Atomic Absorption Spectrophotometric analysis. The present study reveals that selected lead resistant bacterial isolate A2 shows high lead resistance and might be possible to use in bioremediation.

Keywords: Heavy metals, lead resistant bacteria, bioremediation, soil contamination

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## OP-05: Agar Supported NiO NPs: A Sustainable Approach for synthesis of 3, 4-dihydropyrimidin-2(1H)-ones in Aqueous Media

Suraj R. Attar^a, Santosh B. Kamble^a

^aDepartment of Chemistry, Yashavantrao Chavan Institute of Science, Satara, Maharashtra, India.

#### Abstract:

ultrasound-assisted novel approach for the synthesis of А 3,4-dihydropyrimidin-2(1H)-ones developed by using biodegradable was supported nanoparticles in a hydrotropic medium. Agar-supported NiO nanoparticles were synthesized by in-situ co-precipitation method and characterized by FT-IR, TGA-DTA, XRD, EDX, and SEM. Application of Agar-NiO nanoparticles was explored via synthesis supported of 3. 4-dihydropyrimidin-2(1H)-ones in an aqueous medium by using hydrotropes. Short reaction time, high efficiency, centrifugation-free method of separation of the catalyst and column chromatography-free isolation of the product is the key factor of this protocol.

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## OP-06: Isolation and characterization of amino acid producing bacteria from cow dung of exotic Gir cows at Karad, maharashtra

Prasad V. Belekar, Dr. Jaysing U. Patil*

Department of Microbiology, Yashwantrao Chavan College of Science, Karad

Email: belekarprasad1999@gmail.com

Abstract: Cow dung (CD) is the undigested residue of plant matter which has passed through the animal's gut. CD has been shown to be a cheap and available bio-resource that harbours a diverse group of microorganisms which may be beneficial to humans due to their ability to produce a range of metabolites. Isolation and characterization of five distinct amino acid producing bacteria from the cow dung suspensions under aerobic condition have been studied. Based on their morphological and biochemical characteristics, the isolates of two Gram positive P1 and P2 and three Gram negative P3,P4,P5 rod-shaped bacteria were identified. Then screening of bacterial isolates for amino acid production was finally assessed in molasses-based fermentation media, and the amino acids isolated and identified from the five types of bacteria using paper chromatography were methionine, alanine, phenylalanine, aspartic acid and valine respectively. Then quantitatively estimated these amino acids by ninhydrin method. In which alanine producing bacteria like Bacillus subtilis methionine and and Cornybacterium kutsceri gave better results than other three amino acid producers. The relevance of the findings in relation to the commercial production of amino acids of medicinal, agricultural and nutritional significance has been discussed. Keywords: Cow dung, amino acids, fermentation, paper chromatography, ninhydrin method.

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## OP-07: Study of Antimicrobial activity of phenazien-1-carboxylic acid producing *Pseudomonas fluorescens spp*.

Shardul A. Patil and Kishor A. Sutar*

*Department of Microbiology, Yashwantrao Chavan College of Science, Karad

#### Abstract:

Phenazine-1-carboxylic acid (PCA) produced by *Pseudomonas* is a strong and broad range antifungal metabolite. PCA, also known as tubermycin B, is one of the simplest molecules of phenazine group. Phenazine is a heterocyclic nitrogen-containing secondary metabolites produced by *Pseudomonas and* has great potential for use as antifungal and antibacterial. Pseudomonas fluorescens is a gram negative, rod shaped, motile bacteria.

The PCA producing bacteria were isolated from the soil of sugarcane field. Different strains of *P*seudomonas were isolated from that sample. All isolates are studied for morphological and biochemical properties. All isolates showed fluorescence when they subjected to UV light. All biochemical tests performed in the laboratory resembles to that of *Pseudomonas spp.* for glucose fermentation test all the isolate showed negative result, all the organisms have ability to convert  $H_2O_2$  into  $H_2O$  and  $O_2$  which indicate the positive catalase test ,all isolates gave positive result for the citrate test but all of them showed the negative result for the Indol test ,Methyl test and Voges proskaeur test . All isolates have ability to hydrolysis gelatin and Arginine. In this study we also report that Supernatant containing PCA compound inhibited the growth of the different pathogenic

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bacteria such as *E.coli*, *Staphylococcus aureus* and Pathogenic fungus *xanthomonas oryzae* by well method.

Keywords: Pseudomonas spp., PCA, E.coli, Staphylococcus aureus, Xanthomonas oryzae.

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## OP-08: Primary screening of 2,4-Diacetylphloroglucinol production from Pseudomonas fluorescent Bacteria

Avinash A. Raut, Rameshwar B.Munde and Kishor A. Sutar* *Department of Microbiology, Yashwantrao Chavan College of Science, Karad Email: rameshwarv18333gmail.com

Abstract: Certain plant-associated strains of fluorescent Pseudomonas spp. are known to produce the antibiotic 2,4-diacetylphloroglucinol (2,4-DAPG). It has antibacterial, antifungal, antiviral and anthelminthic properties and playsa significant role in a bacterial control of tobacco, wheat and sugar beet diseases.

The 2, 4-DAPG producing bacteria were isolated from the soil of paddy field. Different strains of Pseudomonas were isolated from that sample. All isolates are studied for morphological and biochemical properties. All isolates showed fluorescence when they subjected to UV light. All biochemical tests performed in the laboratory resembles to that of Pseudomonas spp. for glucose fermentation test all the isolate showed negative result, all the organisms have ability to convert  $H_2O_2$  into  $H_2O$  and  $O_2$  which indicate the positive catalase test ,all isolates gave positive result for the citrate test but all of them showed the negative result for the Indol test .Methyl test and Voges proskaeur test . All isolates have ability to hydrolysis gelatinand Arginine.In this study we also report hat 2,4-DAPG compound inhibited the growth of the devastating rice bacterial blight pathogen xanthomonas oryzae in laboratory assys and suppress the rice bacterial blight up to 59%-64% in net-house and field experiment.

Keywords: Pseudomonas spp., 2,4-DAPG, bacterial blight disease, Xanthomonas oryzae

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## OP-9: Isolation & Characterization of dye degrading bacteria from fresh water fish

Kirti Yadav¹, Pratiksha Pawar¹

Department of Microbiology, Yashawantrao Chavan College of Science, Karad.

## Abstract:

Indian rivers are the major source of fish as a food. There are popular names of fishes as a food of India are Bangda & Paplet. The various fishes contains some range of novel bacterial species. The range of bacterial genera varies with factors such as salinity & habitate of water. In this study investigation of flora present on skin of fish was carried out. The surface flora collected from fresh water fish has been spread inoculated on bile agar. All the isolates were screened for different industrially important products. Some of the isolates shown dye degrading properties. These isolates were purified and characterized on the basis of colony morphology and biolchemical tests.

Keywords: skin flora, dye degrading microorganisms, fish.

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## OP-10: Ni-Mn-Al mixed metal oxide catalyzed highly efficient inter- and intramolecular aza-michael addition with aromatic amines

<u>Ashwini D. Patil</u>,^a Uday P. Lad,^b Rahul S. Patil,^b Jaysing U. Patil,^b Tukaram. J. Shinde^{a*}

^aKusumtai Rajarambapu Patil Kanya Mahavidyalaya, Islampur, Dist. Sangli.(Maharashtra, India)

^bYashwantrao Chavan College of Science, Karad, Dist. Satara.(Maharashtra, India) *Corresponding author: email-<u>pshindetj@gmail.com</u>

**Abstract**: Michael addition of heteroatom nucleophiles to conjugated alkenes constitutes an important strategy in carbon heteroatom bond forming reactions [1]. It opens an easy route for the pivotal synthetic intermediates like b-amino carbonyls, esters, nitriles and amides which find applications in the synthesis of natural products, chiral auxiliaries, bioactive compounds, pharmaceuticals, fine chemicals, etc. [2].

Classical Mannich reaction of enolates with imines is a useful alternative for the introduction of such functionality; however, its limited scope coupled with harsh reaction conditions makes its a less attractive route in the synthesis of complex molecules [3,4]. In contrast, the addition of nitrogenous nucleophiles to electron deficient alkenes (aza-Michael reaction) has attracted much attention from organic chemists principally due to its operational simplicity and high atom economy. Over the past few years, a good number of protocols have been reported for this important reaction [5]. These efficient protocols are well suited to primary aliphatic as well as secondary amines; however, aromatic amines being weakly nucleophilic, fail to undergo the Michael addition reaction. It is well known that, nucleophilicity of aromatic amines is highly solvent dependent [6] and they are twice more nucleophilic in aqueous medium [7]. Thus, Michael addition of anilines

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was explored earlier in aqueous medium [8a–g]. These water-mediated protocols often require longer reaction time, thermal or MW activation and furnish the desired products in poor to moderate yields. To alleviate these problems, in recent years Michael addition of anilines has also been investigated using YNO3, SiO2.AlCl3, SiCl4, RuCl3 / PEG, I2, etc. as catalysts [9]. It is worth mentioning that, despite remarkable success of these protocols, their scope has been limitedly explored for intermolecular aza-Michael addition reaction. Consequently, the development of a versatile and an efficient protocol applicable to inter- as well as the intramolecular Michael addition of anilines, leading preferably to biologically active compounds is highly desirable.

In continuation with our ongoing studies on the development of new synthetic methodologies [10], herein we report our studies on aza-Michael reaction with special reference to aromatic amines as Michael donors (Scheme 1).



In conclusion, we have demonstrated for the first time the use of Mixed Metal Oxides (MMO) as a highly efficient catalyst in promoting inter- as well as intramolecular aza-Michael addition of aromatic amines to a range of Michael acceptors. From a mechanistic viewpoint, the success of the aza- Michael reaction **Yashwantrao Chavan College of Science, Karad-415 124** Page 45



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relies either on the increase in nucleophilicity of anilines or the electrophilicity of conjugated alkenes, and the use of a synergistic catalyst is one of the keys in performing the aza-Michael reaction efficiently. It is well accepted that the metal ion from synergistic catalyst forms a strong coordinate bond with the electron withdrawing groups in conjugated alkenes and thereby increase their electrophilicity to facilitate the addition of nitrogenous nucleophiles [9].

Mg-Mn-Al MMO is a well-known synergistic MMO catalyst available commercially and unlike other metal salts it is non-explosive, non-oxidizing as well as a non-nucleophilic agent. It acts as both acidic as well as basic character i.e. synergistic nature and provides a convenient route to effect organic transformations under neutral conditions [11].

Keywords: Mixed metal oxides, Aza michael, Catalysts

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### **OP-11:** Synthesis of *N*-sulfonyl amidines using Copper exchanged Scolecite

Megha Jagadale,^a Altafhusen Naikwade,^b Mayuresh Shinde,^c Mohan Rajmane,^d Gajanan Rashinkar*^b

^aDepartment of Chemistry, Yashwantrao Chavan College of Science, Karad ^{*b}Department of Chemistry, Shivaji University, Kolhapur, 416004 ^cTatyasaheb Kore College of Pharmacy Warananagar, India

^dDepartment of Chemistry Sadguru Gadage Maharaj College, Karad, 415110

Abstract: *N*-sulfonyl amidines are important structural motifs in numerous biologically active compounds and widely used as valuable intermediate for synthesis of various heterocyclic compounds and metal complexes. In view of their interesting properties, a large number of methods have been reported for the synthesis of *N*-sulfonyl amidines. The most common method for synthesis of *N*sulfonyl amidines involves multi-component reaction of alkyne, amine and tosyl azide. A large number of catalytic systems have been developed for this purpose. However, many of them suffer from drawbacks such as harsh condition, large reaction time, etc. Therefore, novel simplified and efficient synthetic methods to *N*-sulfonyl amidines are still needed.



#### Scheme: 1

In the present work, we have synthesized novel catalyst by exchanging surface sites on Scolecite by copper. The resultant copper exchanged Scolecite was

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characterized by FT-IR, FT-Raman and X-ray diffraction (XRD) analysis. The morphology was assessed by scanning electron microscopy. The copper exchanged Scolecite was efficiently employed for multi-component synthesis of *N*-sulfonyl amidines from phenyl acetylene, tosyl azide and amines. The short reaction times, good to excellent product yields and excellent reusability of catalyst are important features of reported protocol.

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OP-12 Aegle marmelos fruit coat ash extract mediated synthesis of Curcumin loaded solid and porous silica nanoparticles and their anticancer activity

> <u>S. D. Karande^a</u>, Dr. S. H. Burungale^a, Dr. V. A. Kalantre^b ^aYashwantrao Chavan College of Science, Karad ^bBalasaheb Desai College, Patan Email: sudipsdk2020@gmail.com

## Abstract:

The present study reports on green approach for synthesis of silica nanoparticles (SiNPs) from Aegle marmelos fruit coat ash by modifying Stober method. The prepared material was utilized for anticancer drug delivery by selecting Curcumin as a model drug. The present investigation had made to synthesis of solid, porous and amine functionalized silica nanoparticles. These SiNPs were characterized by using instrumental techniques such as FTIR, BET, FE-SEM, HR-TEM, DLS and TGA. Model drug Curcumin was successfully loaded to green synthesized SiNPs and sustain release of drug was examined in pH 5 and pH 7.2 buffer solutions. The prolong release pattern of loaded drug ensure that SiNPs have great potential in nano drug delivery. As well as their anticancer efficiency against MCF-7 breast cancer cells was assessed through MTT. Thus, the fabricated CUR@MSN-NH2 composite proves to be a safe and highly promising application for potential breast cancer delivery.

**Keywords:** Silica nanoparticles, Green synthesis, Aegle marmelos, Curcumin, Drug delivery

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## OP-13 Isolation and Identification of Probiotic bacteria From intestine of Fresh water Fish Rastrelliger kanagurta (Indian mackerel)

Pranjal Prakash Etam , K. A. Yadav *

*Department of microbiology, Yashwantrao Chavan College of Science, Karad.

Probiotics is a live microbial feed supplement which beneficially affects host animal by improving it's intestinal microbial balance. Probiotic bacteria are essential for beneficial effects on human health including gastrointestinal function, interaction with immune system . They must be resistant to gastric juice and able to grow in the presence of bile. We tried to isolate probiotic bacteria from fresh water fish *Rastrelliger kanagurta (Indian mackerel)*. The bacteria were screened out for probiotic properties. These isolates were able to survive and grow from pH 3 to 6 with highest viability and growth rate. All isolates were tested for tolerance at 0.15 and 0.3 bile salt concentration. By studying the antibiotic sensitivity test , these isolates were exposed to different antibiotics. These strains were sensitive to Erythromycin, Tetracycline and Chloramphenicol and resistant to penicillin . All biochemical test performed in laboratory resembles to that of genus *Lactobacillus*.

Keywords : Probiotics, Bile salt, Antibiotic sensitivity.





## OP-14 Biosynthesis of sliver nanoparticles from Psidium guajava leaf a extract and its antibacterial activity

Swapnali M. Mali, K.A.Yadav

Department of Microbiology, Yashwantrao Chavan College of Science ,Karad

The field of nanotechnology is one of the most active researches nowadays in material science and technology. Nanoparticles are fundamental building blocks of nanotechnology. The synthesis of silver nanoparticles are carried out by various method including chemical, physical, biological. Synthesis of sliver nanoparticles from sliver nitrate solution from aqueous extract of guava leaf act as a reducing and capping agent. The silver nanoparticles confirmed by its colour changes of fruit extract and further confirmed to the help of UV Visible spectroscopy. Here we have tried to analyse the effect of sliver nitrate on various bacteria. Microorganisms were cultivated on Nutrient agar and MacConkeys agar. The silver nitrate treated with cultivated organism to evaluated their antibacterial activity against *Staphylococcous aureus*, *Bacillus subtilis*, *Escherchia coli* and also used as a growth factor. According to the study, we found that the shoot and root length of plant goes on increased.

Keywords: Silver nanoparticles, Microbial activity.

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**OP-15**: Preparation and evaluation of herbal nanoparticles using ethanolic extract of *Zephyranthes minuta* and their pharmacological screening

Prajakta Nayakal Rajarambapu college of pharmacy, kasegaon **Email:** prajaktanayakal266@gmail.com

### Abstract:

Herbal Nanoparticles is the novel drug delivery system play an important role to improve bioavailability of conventional drugs. Herbal Nanoparticles (Herbosomes) is a current concept in herbal drug technology that removes the limitations of the traditional drug delivery systems. It is considered that a polymers play a very important role in emulsification of Phospholipids

Conclusion - The current research work was aimed to Prepare and Evaluate of Herbal Nanoparticles using Ethanolic extract of *Zephyranthes minuta* by Solvent evaporation techniques and its pharmacological activity.

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## PP-01: Synthesis, Characterization and Application of Copolymer resin

Sunil B. Zanje¹, Yashpal U. Rathod², Samina K. Tadavi², Wasudeo B. Gurnule³, Shyam W. Dafare^{2*}

¹Department of Chemistry, C. J. Patel College, Tirora-441911 ²Department of Chemistry, J. M. Patel College, Bhandara-441904 ³Department of Chemistry, Kamla Nehru Mahavidyalaya Nagpur-440024 Corresponding Author- sdafare77@gmail.com

**Abstract:** The copolymer were synthesize by the condensation polymerization involving monomers like anthranilic acid / guanidine / with formaldehyde in 1:1:2, ratios using 2 M HCl as reaction medium refluxing for 6 hour at 124 °C. The synthesized resins is characterized by elemental analysis, gel permeation chromatography, FTIR, ¹H NMR spectroscopy. The synthesized copolymer studied for electrical conductivity measurements.

**Keywords:** Copolymer, Electrical conductivity, FTIR, ¹H NMR, Elemental Analysis.

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## PP-02: Extraction method of gold (III) from weak acid media: analysis of synthetic mixtures and alloys

Dr. Vishal J. Suryavanshi^{a.b*}, Dr. Ganpatrao N. Mulik^{b*} ^aDepartment of Chemistry, D. Y. Patil Technical Campus Faculty of Engineering and Faculty of Management, Talsande Kolhapur-416004, Maharashtra, India. ^bDepartment of Chemistry, Balwant College, Vita-415311, Maharashtra, India. ^{*}Corresponding author: ganpatraomulik@rediffmail.com vishal.suryavanshi16@rediffmail.com

### Abstract:

The present work explores the liquid-liquid extraction of Au (III) from aqueous sodium malonate medium using 2-octylaminopyridine (2-OAP) as an extractant dissolved in xylene. It is also investigated the influence of several experimental parameters such as pH, weak acid concentration, extractant concentration, equilibrium time, stripping agents, aqueous: organic volume ratio on the extraction of Au(III). The experimental results have shown that the Au(III) was quantitatively transferred from the aqueous phase to organic phase at about 99.5% by 0.05M 2-OAP in 0.05M malonate at 5.0 pH. The ammonia solution was used to strip the gold loaded organic phase and about 99.5% of Au (III) could be reversed extracted into the aqueous phase. Gold(III) was extracted into the organic phase due to the formation of ion-pair complex such as,  $[2-OAP^+ Au (C_3H_2O_4)_2^-]$ . The stoichiometry of the extracted species was determined by the slope analysis method and it was found that 1: 2: 1 (metal: acid: extractant). The method affords the binary, ternary mixture separation as well as separation of Au(III) from synthetic mixtures and alloys. The method is applicable for the determination and separation of gold from ayurvedic samples, and recovery of gold from e-wastes. Key words: Solvent extraction, 2-Octylamiopyridine, Gold(III)

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# PP-03: Zinc oxide catalysed ecofriendly synthesis of nitriles: an ultrasonic protocol

## <u>Tejashri T. Mohite</u>¹, Ankita A. Thorawade¹, Amruta. R. Patil¹, A. N. Bhingare¹, U. P. Lad^{1*}

Yashwantrao Chavan College of Science, Karad, Satara (Maharashtra) * Corresponding author email. as_uday@rediffmail.com

## Abstract:

Background: Nitriles are widely used for transformation into amides, amines, esters, carboxylic acids etc.¹ Hence they have been used as intermediates for the synthesis of fine chemicals such as agricultural chemicals, dyes and medicines.² One of the most general methods for the synthesis of nitriles is the nucleophilic substitution reaction of alkyl halides with metal cyanides. The method is, however, inconvenient because of high toxicity of metal cyanides and troublesome handling. Consequently, other methods such as the dehydration of primary amides³ or aldoximes⁴⁻⁷ have attracted attention. It is known that dehydration of aldoximes into nitriles can be achieved by using a variety of reagents like triethylamine/sulfur dioxide,⁴ zeolites,⁵ sulfurylchloride fluoride,⁶ sulfuryl chloride⁷ etc. but many of these suffer from limitations such as high toxicity, vigorous reaction conditions, unsatisfactory yields, tedious work up and use of large excess of reagents. We have recently reported a rapid synthesis of oximes in high yields from aldehydes using magnesium oxide in aqueous media.⁸ Some rapid procedures for one pot synthesis of nitriles have been described using formic acid⁹ and potassium peroxy monosulfate¹⁰ but whereas the first method suffers from undesirable action of formic acid that can affect acid-sensitive aldehydes, the second suffers from the undesirable oxidation of some functional groups. So, there exists a need for

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developing rapid and facile methods for one pot synthesis of nitriles. As part of our interest in rapid synthetic transformations to yield oximes.⁸ we report herein a rapid one pot synthesis of nitriles aldehydes and hydroxylamine hydrochloride using zinc oxide in aqeous media, which we thought would catalyze both the oxime formation and the consequent nitrile formation steps.

**Result:** A rapid and facile one pot synthesis of nitriles has been carried out in high yields from the corresponding aldehydes and hydroxylamine hydrochloride in the presence of environmentally benign zinc oxide catalysts in aqueous media under ultrasonic irradiation.

**Conclusion:** We have developed a convenient one-pot method for conversion of aldehydes to nitriles in aqueous solvent, under ultrasonic irradiation. Zinc oxide as a catalyst were used for this reactions.

**Keywords:** Nitriles, Aldehydes, Hydroxylamine hydrochloride, Zinc oxide, Aqueous media

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## PP-04: Synthesis and Characterization of Antibacterial Activity of Spinel Manganese Substituted Cobalt Ferrite Nanoparticles for Biomedical Application

Uttam D. Kadam, Bajirao S. Shirke, Rajkumar S. Pandav, Satyanarayan M.Arde, Sanchita P. Patil Yashwantrao Chavan Warana Mahavidyalaya, Warananagar, Kolhapur, MS-India 416113 Corrsponding Author: uttamdkadam@rediffmail.com

Abstract: Nanocrystalline transition metal mixed oxides, attracted much attention due to their catalytic properties and surface area to volume ratio. Among these spinel ferrite nanoparticles have shown immense potential in nanomedicine. The objective of present research work was the synthesis of manganese-substituted composition  $CoMn_xFe_{2-x}O_4$ spinel cobalt ferrite nanoparticles having  $(0.0 \le x \le 2.0)$  by sol-gel method and characterization of their antibacterial activity against E. coli. The synthesized ferrite nanoparticles were characterized by X-ray diffraction, FT-IR, UV- Vis, SEM techniques. XRD analysis confirmed that the all the samples were cubic spinel in structure. It has been found that  $CoMn_xFe_{2-x}O_4$ nanoparticles inhibit bacterial growth. SEM micrograph shows that CoMn_xFe_{2-x}O₄ nanoparticles get adhered to bacterial cell surfaces and damaged the cell membrane due to interaction between nanoparticles and cell membrane. CoMnxFe2-xO4 nanoparticles severely damaged E. coli cells with significant loss of membrane integrity that may lead to cell death. Hence CoMn_xFe_{2-x}O₄ nanoparticles synthesized by using sol-gel method are suitable for biomedical applications.

Keywords: Nonomaterials, Mixed-Metal Oxides, XRD, SEM, Antimicrobial

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## PP-05: Sustainable synthesis of azalactones using magnetic nanoparticle supported ionic liquid phase catalyst

Akash Khavale,^a Sangram Bhise,^a Kamlesh Gangurde,^a Gajanan Rashinkar,^b Megha Jagadale^{a*}

^aDepartment of Chemistry, Yashwantrao Chavan College of Science, Karad, ^bShivaji University, Kolhapur-416004, M.S., India E-mail: megha9627@gmail.com

### Abstract:

The Erlenmeyer-Plochl reaction is most widely employed in synthesis of azlactones. This reaction possesses overwhelming popularity owing to its enormous diverse applications. Azalactones are privileged scaffolds that possess anti-HIV, cardiotonic, anti-inflammatory, sedative, anti-cancer and anti-diabetic activities. Remarkably, azlactones are also employed as intermediates in the synthesis of organic compounds containing amino acids, polyfunctional molecules, thiamine and peptides. By virtue of their dynamic properties, a large number of synthetic approaches have been reported for synthesis of azlactones including ionic liquids as catalytic systems. A traditional approach for synthesis of azalactones involves a multicomponent reaction of aldehyde, hippuric acid and acetic anhydride (Scheme 1). However, many of reported protocols are suffering from several drawbacks such as harsh reaction conditions, longer duration of reaction course, unsatisfactory yields and difficulties in recovery and reusability of the catalyst. These disquiets have created a thirst for demand to develop a modified protocol for the Erlenmeyer-Plochl reaction using a highly robust heterogeneous catalyst.





In the present work, we have successfully synthesized magnetic nanoparticles supported ionic liquid phase catalyst containing hydroxyl anion and employed for multi-component reaction of aldehyde, hippuric acid and acetic anhydride for synthesis of azalactones. The successful preparation of catalyst was reaffirmed by several characterization techniques such as FT-IR spectroscopy, XRD, TGA, VSM, TEM and EDX analysis. The morphology of catalyst was probed by scanning electron microscopy. This protocol offers several beneficial striking features to circumvent drawbacks of previously reported methods.



Scheme 1

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## PP-06: Synthesis of diethyl carbonate using urea and ethanol over Zn-Mn-Al mixed metal oxide

<u>Ashwini D. Patil</u>, ^b Shrutika A. Jadhav, ^a Priyanka S. Jagadale, ^a Komal S. Salunkhe, ^a Rutuja D. Salunkhe, ^a Sanjay D. Jadhav, ^a Rahul S. Patil, ^a Jaysing U. Patil, ^a Tukaram. J. Shinde. ^b Uday P. Lad, ^{a*} ^aYashwantrao Chavan College of Science, Karad, Satara.(Maharashtra, India). ^bKusumtai Rajarambapu Patil Kanya Mahavidyalaya, Islampur, Dist. Sangli.(Maharashtra, India), * *Corresponding author email.* as_uday@rediffmail.com

## Abstract:

Dialkyl carbonates have attracted widespread interest during the last decades due to their extensive industrial applications.¹ As an important homologue of the dialkyl carbonate family, diethyl carbonate (DEC) has become increasingly important as a green solvent, used as an alternative for some toxic substances such as phosgene, dimethyl sulphate and alkyl halide in carbonylation and alkylation reactions, and plays an important role as a electrolyte in lithium ion batteries.^{2–4} Additionally, DEC can be used as an ideal additive for gasoline for its higher oxygen content and favorable fuel/ water distribution coefficient with negligible environmental pollution.⁵

Up to now, DEC can be synthesized via several routes: phosgenation of ethanol,⁶ oxidative carbonylation of ethanol,^{7,8}transesterification of organic carbonates,^{9,10} and ethanolysis of urea,^{11,12} among which ethanolysis of urea is particularly promising due to cost effectiveness, mild reaction conditions and safe operations. Furthermore, this process involves an indirect utilization of CO₂: the by-product ammonia can be recycled and further reacts with CO₂ to produce urea, which is sustainable and friendly process. Zinc oxide (ZnO) catalyst has been

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commonly used in this reaction with a relatively high yield of DEC, but suffered from dissolution of solid ZnO during the reaction.¹³

Therefore, the exploration of highly efficient, stable catalysts is desirable. Previous studies have shown that both acidity and basicity are crucial to determine the catalytic performance in ethanolysis of urea;^{14,15} however, the cooperation of acid–base sites as well as their respective contribution to catalytic performance are unclear. Thus, how to tune the acid–base properties of catalysts so as to achieve a synergistic catalysis with a high stability and efficiency remains a challenge. Now days, this issue was solved by co-operative acid-base catalytic performance of mixed metal oxides as a heterogeneous catalyst.

In this work, by using sol gel method, we have prepared Mn/Zn/Al mixed metal oxides (denoted as  $Mn_xZn_{1-x}Al_2O_4$ –MMO) derived from Mn–Zn–Al layered double hydroxides (LDHs) precursors. Their catalytic performance with different Mn/Zn mole ratios toward the synthesis of diethyl carbonates (DEC) from urea and ethanol was studied in detail, and the highest catalytic activity was obtained over the  $Mn_{0.50}Zn_{0.50}Al_2O_4$  MMO catalyst (DEC yield: nearly up to 40%).

This protocol provides an effective method for the synthesis of diethyl carbonate.

Keywords: Mixed metal oxides, Diethyl carbonate, Catalysts

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## PP-07: Evaluation of antioxidant and anticancer potential of Adenoon Indicum Dalz. leaves against human colorectal cancer Ajit B. Patil^{1,2*,} Dr. A. J. Shinde² ¹Tatyasaheb Kore College of Pharmacy Warananagar, India ²Bharati Vidyapeeth College of Pharmacy Kolhapur, India

Email: abpatil.tkcp@gmail.com

Abstract: Cancer is the second leading cause of the death globally. Nearly 2 million cases of colorectal cancer were identified in 2020, making it the third most prevalent cancer type globally. With almost 1 million deaths per year, it is the second most frequent reason for cancer mortality. Currently available chemotherapeutics applications have been limited owing to the nonspecificity, increased multi-drug resistant and fatal side effects. Therefore, there is a dire need to develop herbal remedies for the effective treatment of colorectal cancer. The Adenoon Indicum Dalz. leaves have been reported to show various biological activities such as astringent, laxative, diuretic, antiseptic, and anticancer, though the dearth of research is to validate its anticancer potential against colorectal cancer. The present research was aimed towards the assessment of the antioxidant and anticancer potential of methanolic extract of Adenoon Indicum Dalz. leaves on human colorectal HTC-116 cancer cell line. The extract of M. indica L. showed promising antioxidant activity. Moreover, the extract demonstrated considerable in vitro cytotoxicity against HTC-116. However, further development of nanoparticulate system incorporated with Adenoon Indicum Dalz. leaves extract and evaluation their anticancer activity in vivo using a suitable animal model is highly required.

**Keywords:** Colorectal cancer; Adenoon Indicum Dalz. leaves extract; antioxidant activity; anticancer activity

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# PP-08: Sustainable synthesis of diaryl ethers using saw dust supported Ag (I) *N*-heterocyclic carbene complex

Samir Naikwadi,^a Prasad Kumbhar,^a Pratik Bhingardeve,^a Gajanan Rashinkar,^b Megha Jagadale^{a*} ^aDepartment of Chemistry, Shivaji University, Kolhapur, 416004 ^bDepartment of Chemistry Sadguru Gadage Maharaj College, Karad, 415110

Abstract: Diaryl ethers are medicinally important scaffold found in antitumor, antibiotics and anti-HIV agents. They are valuable intermediates in organic synthesis, versatile building blocks used in the synthesis of natural products. Transition-metal promoted transformations are most preferred mode for synthesis of several kinds of organic molecules. Owing to the fascinating properties of diaryl ethers, variety of catalytic systems has been reported so as to expand effectiveness of this protocol. Many of them suffer from several problems including unsatisfactory yield and troublesome chemical process management. Thus, highly efficient method for the synthesis of diaryl ether is desirable as there is ample of room for improvement especially toward developing green procedure using recyclable and highly robust heterogeneous catalyst.



### Scheme 1

In the present work, we have synthesized sawdust supported *N*-heterocyclic carbene-Ag (I) complex. The resultant catalyst has been characterized by FT-IR,

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XRD, XPS, TGA, SEM, EDX analysis. The catalytic activity of complex was explored in the synthesis of diaryl ethers (**Scheme 1**). Operational simplicity, good yields, clean reaction profile, facile separation and excellent reusability of catalyst are noteworthy merits of reported protocol.

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# PP-09: Study of catalytic and antimicrobial activity of Sol-gel synthesized molybdenum doped on Ceria oxide

Mr. Thorat A G and Dr V. P. Shinde^{1*} ¹Yashwantrao Mohite College of Arts, Science and Commerce, Bharati Vidyapeeth University, Pune Corresponding author E-Mail: janhavi3105@gmail.com

Abstract: Bimetallic nanomaterials are the most important and widely employed categories of solid acid catalysts, either as active phases or as supports. Application of these mixed metal oxides nanomaterials has an important role in organic transformations, due to their simplicity in handling, decreased reactor and plant corrosion problems, cost effectiveness and because most of the mixed metal oxides are reusable and recyclable.

In view of this, series of molybdenum doped on Ceria oxide synthesized by using Ultrasonicated sol-gel method with precursors of ammonium hepta molybdate and Cerium nitrite respectively. These synthesized mixed oxides were calcined and characterized by using FT-IR, XRD and TGA techniques. XRD showed highly crystalline material with nano size and confirmed the presence of phases of CeO2 and MoO3. Photochemical degradation of dyes and Antimicrobial activities were also studied against the two microorganisms i. e. gram positive and gram negative. These series of catalysts study revealed the importance of doped material in catalysis and biological activity.

Keywords: Metal oxides, Nanomaterials, Ceria oxide, microorganism, catalysis

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# PP-10: Environmentally benign, magnesium oxide catalysed synthesis of oximes: a probe for development of carbon-nitogen bond

Arati V. Mahamuni¹, ¹, Nikita R. Rakate¹, Sanika S. Shant¹, Sujata S. Shewale¹, B. E. Mahadik¹, R. S. Patil¹*

Yashwantrao Chavan College of Science, Karad, Satara (Maharashtra) * Corresponding author email. rspatilorg@gmail.com

## Abstract:

**Background:** Synthesis of oximes is an important reaction in organic chemistry. However these versatile oximes are used for protection, purification, and characterization of carbonyl compounds. Nitriles, amides via Beckmann rearrangement, nitro compounds, nitrones, amines, and aza-heterocycles can be synthesised from oximes. They also find applications for selective alpha-activation. In inorganic chemistry, oximes act as a versatile ligand. Several procedures for the preparation of oximes exist, but, most of them have not addressed the green chemistry issue. They are associated with generation of pollutants, requirement of high reaction temperature, low yields, lack of a generalized procedure, etc. Hence, there is a demand for developing an efficient, convenient, and non-polluting or less polluting alternative method for the preparation of oximes. In this context, magnesium oxide is very useful as it is cheap, commercially available, air stable crystalline solids, safe, and non-toxic, hence easy to handle.

**Results:** Carbonyl compounds (heterocyclic, and aromatic) were converted into the corresponding oximes in excellent yields by simply mixing the reactants at room temperature in aqueous solvent in the presence of  $Mg_2O$ . Most importantly,

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this method minimizes waste disposal problems, provides a simple yet efficient example of unconventional methodology and requires short time.

**Conclusions:** We have developed a novel, quick, environmentally safe, and clean synthesis of aldoximes and ketoximes under aqeuous condition.

Keywords: oximes, carbonyl compounds, Mg₂O, aqeous chemistry, eco-friendly

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# PP-11: A green approach for C-H Arylation of Benzoxazole using efficient heterogeneous Magnetic Nanoparticle supported N-Heterocyclic Carbene-Nickel Complex

Altafhusen Naikwade,^a Megha Jagadale,^b Dolly Kale,^c Gajanan Rashinkar^{*c} ^aShivraj College Gadhinglaj, Kolhapur 416502

^bDepartment of Chemistry, Yashwantrao Chavan College of Science, Karad, 415124

^{*c}Department of Chemistry, Shivaji University, Kolhapur, 416004

**Abstract:** In the recent years, transition-metal-mediated C-H arylation of benzoxazole has received tremendous attention in the synthetic chemistry. The arena has witnessed extensive development especially in the synthesis of bioactive scaffolds and diverse complex molecules in organic and organometallic chemistry. In this regard, C–H arylation of benzoxazole has been a frontier area of research due to noteworthy biological activities of 2-substituted benzoxazoles like antitumor, anticancer and inhibitory activities. Additionally, 2-substituted benzoxazoles are commonly found moieties in agrochemicals, metal sensors, engineering plastics, optical brighteners for textiles. In view of their interesting properties, a large number of protocols have been reported for the synthesis of 2-aryl benzoxazoles *via* C–H activation. However, many of them suffer from drawbacks such as harsh condition, large reaction time etc. Therefore, novel efficient synthetic methods to C–H arylation of benzoxazole are still needed.



Scheme 1

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In the present work, magnetic nanoparticle supported *N*-heterocyclic carbene–nickel complex has been prepared. The resultant complex was characterized by FT-IR, XRD, TEM, VSM and XPS. The magnetic nanoparticle supported *N*-heterocyclic carbene-nickel complex was efficiently employed for synthesis of C–H arylation of benzoxazole with aryl boronic acids (**Scheme 1**). The short reaction times, good stability, excellent yields, facile magnetic separation and excellent reusability of complex are important features of reported protocol.

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# PP-12: Structural and electrical properties of Mg substituted Mn ferrite by sol-gel method

 G. B. Dhake,^{*} Pratiksha Desai, Vaishnavi Jagtap, Achal taware, Pradnya Gurav Department of Chemistry, Yashwantrao Chavan College of Science, Karad, 415124 Email: gajanan.dhake@gmail.com

## Abstract:

 $Mg_{1-x}Mn_xFe_2O_4$  (where x= 0.0, 0.25, 0.50, 0.75, 1.0) ferrite nanoparticles diffraction Analysis were synthesized by sol-gel auto-combustion method. The thermal decomposition process was investigated by Thermo Gravimetric Analysis (TGA) and Differential Thermal Analysis (DTA) technique. The phase composition of Magnesium substituted Manganese ferrite samples were characterized by powder x-ray diffraction analysis (XRD). The entire sample showed formation of cubic spinel symmetry. The DC conductivity studies of sample reveal their semiconducting nature. The thermal analysis shows formation of spinel phase at 1273K. The lattice parameter and X-ray density increases with increasing Mn content. The stoichiometry of sample matched with calculated one. The electrical resistivity of all sample decreases with increasing temperature.

Key Words: Sol-gel auto-combustion, TGA, DTA

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## PP-13: Dissolution of erythromycin stearate by using UV spectroscopy

Komal More, Akshata Karale, Isha Kadam, Swaliya Ghashi, Shivaji Burungale, Ankush Mali Department of Chemistry, Yashwantrao Chavan College of Science, Karad -415124, India Email: morekomal501@gmail.com

### Abstract:

An UV Spectrometric method for the quantitative determinations of Erythromycin, macrolide antibiotics in tablets was developed in present work. The parameter linearity, precision, limit of detection, limit of quantization, range wear studied according to International Conference on Harmonization guideline. UV spectroscopic determination was carried out at an absorption maximum of 285 nm using methanol as solvent. Results of the analyses were validated statistically and by recovery studies. The proposed method is simple, rapid, precise and accurate and can be used for the reliable quantisation of Erythromycin in pharmaceutical formulation. In the UV spectroscopic method linearity over the concentration range of Erythromycin was found to be 1-9 ug/ml with a concentration coefficient 0.9873.



Molecular Formula:C₃₇H₆₇NO₁₃. Molecular Weight: 733.92

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Key word: UV Spectroscopy.

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# PP-14: Photocatalytic degradation study of Congo red using Mg-Co ferrite powder

Digvijay Anuse, Akshy Nikam, R. S. Patil, S. D. Jadhav* Department of Chemistry, Yashwantrao Chavan college of Science, Karad

#### Abstract:

The photocatalytic degradation of methyl orange and Congo red dye was performed under the illumination of visible light (Philips 250Watt) as a source of photons. The complete distraction of the aromatic ring was ascertained by UV spectroscopic analysis. A decrease in dye concentration and an increase in the concentration of CO2 indicate dye mineralization. The behavior of this reaction was pseudo-first-order and the maximum photodecolorization efficiency was  $\sim$ 85.16% for Methyl orange and  $\sim$  95.40 for Congo red in 120-150 min. at 30°C.

- XRD-All the indexed diffraction peaks correspond to the (111), (220), (311), (400), (422), and (511) planes of polycrystalline spinel ferrite.
- Effect of irradiation time on photodegradation of Methyl orange dyes. The further comparison reveals ~90% degradation of Congo red within 120 min of irradiation.
- Effect of catalyst dose on the photodecolorization rate--

The maximum rate constant and PDE % are found at dose 2.0 g/ 100 mL of  $Mg_{0.5}Co0.5Fe_2O_4$  95.40% at 60 min.

Reusability study of catalyst

The effect of catalyst used after several runs on the dye solution at conditions: dose (2.0) g/100mL, conc. = 30 ppm, initial pH of solution = 5.5 and T= 303K. The

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PDE% for Congo red is 95.40%. The photodegradation rate further goes on decreases after each successive run.

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# PP-15: Effect of sintering temperature on selectivity of zinc ferrite as gas sensors

Dhanajay Dugane, Dastagir Mull, Audhut Shete, R. S. Patil and S. D. Jadhav Department of Chemistry Yashwantrao Chavan College of Science, Karad, 415124.

## Abstract

The effect of variation in sintering temperature (500-900°C/4h) of  $ZnFe_2O_4$  synthesized by using co-precipitation method on the gas sensing characters. The spinel structure and the presence of residual phases were checked by XRD analysis. Gas sensing response was evaluated as a function of operating temperature for different test gases/vapours such as ammonia (NH₃), chlorine (Cl₂), LPG, CO₂, hydrogen sulphide (H₂S) and Hydrogen (H₂). Maximum gas response activity was achieved at 300^oC concentration for hydrogen sulphide gas.

- * The XRD patterns reveal spinel cubic structure for the synthesized materials.
- The particle size is calculated from the most intense peak (311) using the Scherrer formula.
- Selectively ZnFe₂O₄ exhibit response towards hydrogen sulphide than ammonia, chlorine, LPG, CO₂ and H₂ gases/vapours.
- ✤ Zinc ferrite gives better response towards hydrogen sulphide at 300°C.
- The gas sensing activity decreases with increase in the sintering temperature were studied.
- The material used for the detection of toxic and hazardous gases at commercial as well as industrial level.

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# PP-16 Synthesis, Characterization and Reusability of Mg1-xMnxAl2O4 for degradation of Rhodamine B

Komal More, Swaliya Ghashi, Akshata Karale, Isha Kadam, Shivaji Burungale, Ankush Mali Department of Chemistry, Yashwantrao Chavan College of Science, Karad -415124, India Email: <u>swaliyag123@gmail.com</u>

### Abstract:

Nanocrystaline compounds of Mg1-xMnxAl2O4 (x = 0.0, 0.25, 0.50, 0.75, 1.0) were prepared by using simple sol-gel method. The synthesised material were charactrised by differenet spectroscopic techniques such as, The thermal stability of samples were checked by taking TGDTA, The study of XRD shows the formation of single cubic spinel phase with average crystalite size 28 nm. The composition of Mg0.50Mn0.50Al2O4 show spherical interlinked fibrous morphology. The surface morphology of the sample are observed by the use of scanning electron microscopy. The purity of synthesised were checked by using an energy dispersive X-ray spectroscope. The FTIR spectra were recorded in the range of 350- 700 cm-1 using KBr pellets. The particle size was estimated using TEM. In the present investigation an attempt has been made to the synthesis of fine Mg1-xMnxAl2O4 mixed metal oxide powders by sol-gel auto combustion method and investigated for their dye degradation and reusability.



Structure of Rhodamine B

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Infrared Spectra of  $Mg_{1-x}Mn_xAl_2O_4$  ( $0 \le X \le 1$ ).

Key words: Sol-gel method, XRD, EDAX, SEM, TEM and IR.

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# PP-17 Baseline study of soil at koyna-river area in patan tehsil of satara district

<u>S. D. Karande^a</u>, Dr. S. H. Burungale^a, Dr. V. A. Kalantre^b ^aYashwantrao Chavan College of Science, Karad ^bBalasaheb Desai College, Patan Email: <u>sudipsdk2020@gmail.com</u>

## Abstract:

The fertility of the soil in Patan tehsil Patan the attachment area of the Koyna river gives variation in the parameter. The region has some specific doses of fertilizers like 100:100:50 for N, P, K which improve the quality of the crops like rice.

In this research, we focused on soil fertility along with their pH value, nutritional level, conductivity, and mineral level. For this study, we selected the Koyna basin. We chose Patan Tehsil and covered its villages. Koyna river runs in all three Seasons. Many minerals and salts found in river water. Most of the farmers use river water for irrigation and through the water, these materials shift from basin to the land. The soil nature affected the quality and quantity of the crop. So we interested to know the soil nature and which crop can we grow in this environment and irrigation awareness among the farmers to maintain a healthy environment of soil for a long time.

Key words: Fertility of soil, heavy rainfall, crop yield, crop pattern

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# PP-18: Recent advancement in mesoporous silica for removal of metal ions from water

S. D. Karande¹*, P. T. Patil¹, S. S. Thorat¹, S. V. Chopdar¹, P. A. Patil¹, P. M. Jadhav¹, M. S. Patil¹, Dr. S. H. Burungale
Yashwantrao Chavan College of Science, Karad.
*Corresponding author email - sudipsdk2020@gmail.com

## Abstract:

Mesoporous silica nanoparticles (MSNs) were firstly discovered in late 1970 and later Japanese scientists independently synthesized the MSNs in 1990. These materials are comprised of porous structures with hundreds of atomic levels arranged mesoporous and later the same report was produced by American scientists at the Mobile Research and Development Corporation in 1992. Mesoporous silica nanoparticles (MSNs) are silica based nanoparticles, they are silicate which have 2D structure with well-defined pore networks having hexagonal structure. MSNs have the large surface area due to ordered and regular arrangements of the monopores.

MSNs have many advantages due to its porous structures with pore size in the 2-50 nm range, large pore volume (up to 2.5 cm3/g), high surface area (>1000 m2/g), tunable pore diameter (1.3-50 nm), ease of functionalization due to surface hydroxyl groups, biodegradable, high chemical and biological stability with good biocompatibility. In this work we are highlighting statistics form literature search about the reports on mesoporous silica for removal of metal ions from water.

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# PP-19: TiO, Sensitized by Safranine O Dye using UV-A Light System

Satyajit Patil, Ajit Takle, Shubham Shinde, Digvijay Kanse, Jayesh Gotal, S. D. Jadhav*

Yashwantrao Chavan College of Science, Karad.

## Abstract:

This study examined the photocatalytic decolorization of safranine O dye by using  $\text{TiO}_2$  powder as a photocatalyst, under illumination with using artificial UV-Alight. The behavior of this reaction was pseudo first order and the maximum of removal was 88.176% in 100 min. at 30°C. The increased of reaction temperature enhances the photoreaction, with positive  $\Delta$ H that equal to 20.552 kJ mol-1 and given low activation energy reach to 22.609 kJ mol-1. The Fenton reaction was applied in aqueous solution of this dye with the using TiO₂ powder and given maximum photo decolorization efficiency.

### Conclusions

- The photocatalytic decolorization process of safranin O dye in suspension solution of TiO₂ powder under UV-A light system was done. This photoreaction is found to be fast, endothermic and obeyed the pseudo first order with low activation energy.
- The efficiency for decolorization of safranine O dye with the using the best amount of TiO2 powder under addition some oxidant agents have followed by the sequences:

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✤ PDE% using Fe(II) < PDE% without oxidant agents < PDE% using H₂O₂ < PDE% using ( mixture from H₂O₂ and Fe(II)).

The using of Fenton reaction was enhanced the efficiency that changed from 88.176% to 98.838% at 100 min.

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# PP-20: Development of anti-microbial copper nanoparticles via green chemistry approach

Sayali Jadhav^a, Nita Sonawale^b, Somnath Bhinge^a, H. N. More^b ^aDepartment of Pharmaceutical Chemistry, Rajarambapu College of Pharmacy, Kasegaon, Walwa, Sangli, Maharashtra India 415404 ^b Department of Pharmaceutical Chemistry, Bharati Vidyapeeth College of Pharmacy, Kolhapur, Maharashtra India 416013.

## Abstract:

Nanoparticals are one of most utilised chemicals due to their widespread range of applications. Green chemistry is an attractive approach for development of the metallic nanoparticals in which plants extracts are utilised to develop the metallic nanoparticals so that the development undesirable by products which are associated with the chemical methods can be eliminated. Objectives: This study was developed with an aim to develop copper nanoparticals using Fagonia Arabica leaf extract and evaluate their anti-microbial activity. Materials and Method: Aqueous extract of Fagonia Arabica was utilized for the green synthesis of copper nanoparticles. The prepared system was characterized using UV-VIS spectroscopy, XRD, SEM, EDAX. The antimicrobial evaluation of prepared system was carried out using diffusion plate against B. subtilis, P. aeruginosa and S. aureus. Results and DiscussionThe spectroscopic analysis of prepared system showed sharp peak at 381 nm in UV which corresponds to the production of copper nanoparticles. SEM analysis showed spherical shaped copper nanoparticles with size range of 32 nm. EDAX showed presence of elements like C, S, O and Cu which indicated development of the CuNPs .Antimicrobial study reveals that green synthesized

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copper nanoparticles had shown antibacterial activity against selected three microbial cultures.

## **Conclusion:**

Current study concludes that green chemistry can be an attractive technique for development of Fagonia Arabica copper nanoparticles as potent antimicrobial agents. More advantageous over use of micro-organisms by less elaborate process of maintaining cultures and does not induces toxic nanoparticles.

Keywords: Green Chemistry, Nanoparticals, Antimicrobial





# PP-21: Development and Industrial applications of Transdermal patch: Formulated by using Silver (Ag Nps) Nanoparticles of Terminaliabellerica plant extract

Vishwajit Patil

Rajarambapu College of Pharmacy Kasegaon, Tal- Walwa, Dist-Sangli 415404. Email: vpatil5313@gmail.com

## Abstract:

Present study was designed for green synthesis of silver (AgNPs) nanoparticles by using Terminalia bellerica plant extract and their pharmacological evaluation. Terminalia bellerica is characterized by powdered microscopical characters and specific chemical tests. Alcoholic extract of Terminalia bellerica were obtained by continuous heat extraction method. A Chemical constituent were Isolated from Terminalia bellerica extract by using TLC and Column chromatography. Plant extract (TB) is mixed with silver nitrate solution respectively, incubated and studied synthesis of nanoparticles by using The nanoparticles synthesized were irregular and rectangular in shape having average particle size 10-50 nm. The activity was assessed by studying the follicle count, skin thickness, hair weight. nano-formulate (AgNPs) which will be incorporated into suitable dosage form like fast dissolving film for generation of novel drug delivery system with specific on set of action on epidermis which improved therapeutic efficacy for treatment of hair growth activity. It was concluded that Green synthesized (TBAgNPs) nanoparticles shows the enhanced pharmacological activities. It may have potential as a hair growth promoter.

Keywords: Terminalia bellerica, silver (AgNPs) nanoparticles, Transdermal Patch

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# PP-22: Development and characterization of functionalized single walled carbon nanotube loaded Oxaliplatin: *in vitro* cytotoxicity and apoptosis study

Pranali Lade^a, Somnath Bhinge, Mangesh Bhutkar^b, Vijay Salunkhe, Srinivas Mohite

^aDepartment of Chemistry Rajarambapu College of Pharmacy, Kasegaon, Walwa, Sangli, Maharashtra India 415404

^bDepartment of Pharmaceutics Rajarambapu College of Pharmacy, Kasegaon, Walwa, Sangli Maharashtra India 415404.

^bDepartment of Pharmacognosy Rajarambapu College of Pharmacy, Kasegaon, Walwa, Sangli Maharashtra India 415404.

#### Abstract:

The study was aimed to anchor folic acid, chitosan and Oxaliplatin to the functionalized single walled carbon naotubes for colon targeted delivery so as to target folate receptors that are over expressed in colon cancers. The developed system (FA-CHI-FSWCNT-OXA) was characterized by FTIR, SEM, TEM, XRD, TGA, and DSC also evaluated for entrapment efficiency, drug release, apoptosis and in vitro cytotoxicity against COLO320DM and HT29 cell lines by MTT and SRB assay. The results of FTIR studies confirmed the attachment whereas TEM results exhibited 1-300nm size of the developed system. Drug entrapment in CNT was found to be 93.43±1.65% and in vitro drug release was found to be 94.73±0.8956 % at 24 hrs by dialysis bag method. Cytotoxicity by MTT assay of system showed 92.36±0.9421% inhibition as compared to Oxaliplatin which inhibition. In SRB developed exhibited 66.58±0.3785% assay, inhibition. system showed 91.22±0.8950% whereas. Oxaliplatin showed 76.69±0.5227% inhibition. Against HT29 developed system exhibited Yashwantrao Chavan College of Science, Karad-415 124 Page 90



better cytotoxicity effects as compared with plain Oxaliplatin. Our findings are suggestive of potential development of CNT loaded antineoplastic agent(s) for target specific delivery.

*Keywords*: Carbon nanotube; fictionalization, Oxaliplatin; colon cancer; cytotoxicity; apoptosis

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PP-23: Synergistic effect of synthesized iron nanoparticles of neem extract with conventional antibiotic against gram positive and negative microorganism

> Prajakta Nayakal, Shubham Sisale Rajarambapu college of pharmacy, kasegaon **Email:** prajaktanayakal266@gmail.com

## Abstract:

Nowadays, several antibiotics used for the treatment of a variety of infectious human diseases possess a limited antimicrobial spectrum due to the emergence of multi drug-resistant (MDR) bacterial strains. It has therefore lead to the use of two or more antimicrobial agents as a combination treatment for preventing or delaying the emergence of resistant microbial strains and in certain cases to also exhibit a synergistic effect which proves to be useful in the treatment of bacterial infections especially in otherwise resistant-bacteria cases. Neem, a traditionally known plant in the Indian system of medicine is a worldwide recognized natural antibiotic. Thus, in the present investigation an attempt has been made to study the effect of use of Iron nanoparticles of Neem extract along with several antibiotics as a combination to overcome the occurrence of resistance.

## **Methods and Materials**

Iron nanoparticles of the alcoholic extract of neem leaves were used for the study. Solution A containing Iron nanoparticles 5 mg/mL alone, Solution B comprising of Standard antibiotics alone 5 mg/mL and Solution C containing combination of 2.5 mg/mL of Iron Nanoparticles and a selected standard antibiotic at a concentration

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of 2.5 mg/mL were tested for their antibacterial potential against the selected strains of micro-organisms namely Staphylococcous aureus, Pseudomonas aeruginosa, E. coli and Bacillus subtilis using agar plate technique.

## Results

The antimicrobial activity was assessed by measuring the diameter of zone of inhibition. The results indicated the synergistic activity exhibited by the combination of Iron nanoparticles and half the concentration of the standard antibiotics used in the study. Thus, the dose of standard antibiotics may be reduced to almost half in concentration when combined with the Iron nanoparticles of Neem extract without compromising their efficacy. The use of natural antibiotic thus helps to achieve reduction in dose of standard antibiotic.



# PP-24: Isolation, Characterization of cellulose degrading organism from rhizospheric soil of *Cajanus cajan*

<u>Gayatri S. Chavan, Tanjum I. Satarmaker</u>, and K. A. Sutar gayatrichavan5231gmail.com, satarmakertanjum@gmail.com Department of microbiology, Yashwantrao Chavan college of science, Karad. Maharashtra – 415124.

## Abstract:

Cellulose is most abundant organic compound on earth. It is complex carbohydrate consisting of oxygen, carbon and hydrogen. It is important structural unit of plant cell wall. Cellulose degraders plays important role in degrading cellulosic material by producing cellulase enzyme.

The aim of present study was to isolate the microorganisms from different geographical locations, capable of producing cellulase with microbial activity. Soil sample were collected from different areas. They are enriched in carboxy methyl cellulose medium for 10 days from that pure isolates obtained and their biochemical performed to identify genus level, isolates screened by 1% Congo red, 1N NaCl to produce clear zone. Enzyme obtained by centrifugation of enriched pure culture and optimized.

Keywords: Cellulose, cellulose enzyme, carboxy Methyl Cellulose.

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# PP-25: Application of Green chemistry in Nanotechnology

Priyanka Ramugade, Dange Pratiksha

Rajarambapu College of Pharmacy, Kasegaon, Sangli, Maharashtra- 415110

### Abstract:

Green chemistry is the design of chemical product and processes that reduce or eliminate use of Hazardous substances. In addition Paul Anastas has developed "The Twelve Principles of Green Chemistry" a framework widely used by industry and universities. Nanoscale metals are widely used in many fields such as environment, medicine, and engineering that synthesis of nanoscale metals is a timely topic.

The green synthesis of nanoparticles (NPs) using living cells is a promising and novelty tool in bionanotechnology. Chemical and physical methods are used to synthesize NPs; however, biological methods are preferred due to its eco-friendly, clean, safe, cost effective, easy, and effective sources for high productivity and purity.

Carbon dots (CDs) are nanoparticles with tunable physicochemical and optical properties. Their resistance to photobleaching and relatively low toxicity render them attractive alternatives to fluorescent dyes and heavy metal-based quantum dots in the fields of bioimaging, sensing, catalysis, solar cells, and light emitting diodes, among others.

Nanofibers, the widely applied in various field of science research is one of the important area in nanotechnology research .nanofibers can be classified polymeric, ceramic and composite nanofibers depending upon the material used.

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**Conclusion:** Green synthesis employs a clean, Safe, cost effective and environmentally, Friendly prosess of constructing Nanomaterials. Increased energy Efficacy, reduced waste and greenhouse gas emission, and decressed composition of non-renewable raw material are the main advantages of green nanotechnology.

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# PP-26: Qualitative phytochemical analysis of wild vegetables

Saish Shinde, Manasi Masugade, Nehali Nikam, Nilofar Shikalgar, Harsh Mali, Rutuja Bhosale and Kirtane Sushama Department of Botany, Yashwantrao Chavan College of Science, Karad (MS), India. Email: <u>rutujabhosale1096@gmail.com</u>

# Abstract:

Wild Vegetables are the vegetables, which grow and survive naturally without any special care. Wild vegetables are very precious gift of nature as they are very rich source of valuable phytochemicals. Review of literature indicates that, they are not only nutritionally but also medicinally valuable and are beneficial for health of human being.

The research on the phytochemical analysis of Wild Vegetables is a need of an hour. Keeping this view in mind, the present investigation on qualitative analysis of phytochemical of wild vegetables viz. *Amaranthus spinosus* L., *Moringa oleifera* Lam., *Clerodendrum serratum* L., *Portulaca oleracea* L. was carried out. The qualitative analysis of phytochemical's includes - alkaloids, flavonoids, terpenoids, saponin, tannin, phenols, glycosides. The overall result obtained, indicated that, tests were positive for all the wild vegetables. The test for terpenoid were absent in leaves of *Clerodendrum serratum* L. The test for phenols were negative for *Portulaca oleracea* L. The positive or negative tests indicates, the presence or absence of phytochemicals respectively.

Key words: Wild vegetables, Phytochemical, Qualitative analysis

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# PP-27: Primary detection of phytochemicals from medicinal plants: *Plumbago* zeylanica L. and *Synedrella nodiflora* L.

Rutuja Bhosale, Trupti Lade* and Kirtane Sushama Department of Botany, Yashwantrao Chavan College of Science, Karad (MS) India *Rajarambapu College of Pharmacy, Kasegaon (MS) India. Email: <u>kirtanesa@gmail.com</u>

## Abstract:

Most of the population of the world is dependent on medicinal plants as a primary health remedy. It is also estimated that, 3.3 billion individuals are regularly use traditional wild medicinal plants. Medicinal plants/herbs, have been discovered and used in traditional medicine practices since ancient times. Review of literature indicates that, Medicinal plants are rich source of important phytochemicals, phytonutriceutical's, vitamins, minerals, dietary fibre etc. which are beneficial for health of human being.

In the present investigation, primary detection of phytochemicals such as Alkaloids, Carbohydrates, Flavonoids, Phenols, Saponins, Tannins, Terpenoids, Anthraquinones, Glycosides, Amino acids and proteins, Gums of Plumbago zeylanica and Synedrella nodiflora were analysed by using standard methods. The results obtained indicates that, test for Terpenoids, Gums were negative for Plumbago zeylanica and positive for Alkaloids, Carbohydrates, Flavonoids, Phenols, Saponins, Tannins, Anthraquinones, Glycosides, Amino acids and proteins. While for Synedrella nodiflora, test of Alkaloids, Flavonoids, Anthraquinones, Glycosides, Gums was negative and tests of Carbohydrates, Phenols, Saponins, Tannins,

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Terpenoids, Amino acids and proteins were positive. The positive and negative tests confirm the presence and absence of these phytochemicals respectively.

**Keywords**: Medicinal plants, Phytochemicals, Plumbago zeylanica L., Synedrella nodiflora L.

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### PP-28: Formulation and evalution of bio-adhesive bandage for bone fracture

Trupti Lade, Pratima Tatke, *Sushama Kirtane

Rajarambapu College of Pharmacy, Kasegaon (MS) India.

*Department of Botany, Yashwantrao Chavan College of Science, Karad (MS)

India

Email: truptiplade@gmail.com

### Abstract:

Formulation and evaluation of bio adhesive bandage is very helpful for wound healing. Bioadhesion includes cell-to-cell adhesion, bacteria binding to surfaces, adhesion to mucous membranes and the use of adhesive materials in medical treatments (such as in drug delivery devices, tissue adhesives or wound dressings). A bandage is used to hold a dressing in place over a wound, to create pressure over a bleeding wound to prevent rapid blood loss and splinting of injured part of the body, which provide support to an injured part. Bio-bandages are made from herbal compounds that impart host compatible therapeutic properties. A bandage prepared with an adhesive, to which a pad is fixed to a central portion of the bandage containing herbal composition and a protective paper having opposed end portions removable attached to inside of the bandage. Band aid with herbal preparations can best aid towards microbial medicament of bio adhesive tape which are magnificence in appearance.

Keywords: - Bio-adhesive bandage, herbal, natural fiber, antimicrobial.





# PP-29: Green Chemistry approach for synthesis of novel N-substituted 1,3,4oxadiazole derivatives with molecular docking, *insilico* ADME prediction and anticancer, antimalarial screening with QSAR study

<u>Akshay R. Yadav</u>*, Dr. Atul R. Chopade, Dr. Shrinivas K. Mohite, Dr. Chandrakant S. Magdum

Rajarambapu College of Pharmacy, Kasegaon, Sangli, Maharashtra- 415110 Abstract: 1,3,4-thiadiazole acetamide derivatives (3a-t) were synthesized by green chemistry approach. Molecular docking results highlight that fact that the compounds (3h, 3j and 3n) exhibited good docking scores and could be considered as possible hit as therapeutic agents. In addition, in-silico ADMET analysis was done to predict the ADMET properties. It was intresting to note that SwissADME results coherence with final result of the compounds which have pharmacological activity means compounds confirmed to be drug-like molecules. Series of Novel N-Substituted Synthesized compounds (3h, 3j and 3n) were characterized using IR, NMR and Mass spectroscopy. As Brine shrimp lethality assay that may prove quite helpful as a preliminary screen to determine toxic properties. Compounds produced dose dependent cytotoxicity effect to brine shrimp nauplii. These compounds shows promising anticancer and antimalarial agents. A significant correlation was observed between the *in-silico* studies and the pharmacological activity. The anticancer activity results was correlated with their physiochemical and structural properties by QSAR analysis using PLS advanced method. The selected model of 3D QSAR showed correlation of descriptors with anticancer activity. The resulting model exhibited good  $q^2$  and  $r^2$  values respectively.

**Keywords:** 1,3,4-thiadiazole, Molecular docking, *In-silico* ADME, Brine shrimp lethality assay, Anticancer activity, Antimalarial activity, 3D QSAR.

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PP-30: ZnO Nanoparticles Catalyzed Green and Highly Efficient Method for the Synthesis of 1,5-Benzodiazepines in Hydrotropic Medium at Room Temperature

Jayesh Gotal, Ajit akale, Digvijay Kanase, S. D. Karande*

Yashwantrao Chavan College of Science, Karad.

*Corresponding author email - <u>sudipsdk2020@gmail.com</u>

## Abstract:

A green and highly efficient method was developed for the synthesis of 4-substituted 1, 5-benzodiazepines derivative via ZnO Nps. The ophenylenediamine reacted with ketone derivatives in presence of ZnO Nps as heterogeneous catalyst under hydrotropic medium at room temperature. The Reaction was completed in short reaction time. Easy work-up, high yields and reusability of catalyst are the key advantages of this work.

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