

## **National Conference on Recent Trends in Chemistry(NCRTC-2020) Report**

The Department of Chemistry, The Institute of Science, Mumbai-32 in collaboration with National Gallery of Modern Art, Mumbai, Ministry of Culture, Govt. of India organized a national conference titled “National Conference on Recent Trends in Chemistry”(NCRTC-2020) on 13<sup>th</sup> and 14<sup>th</sup> February 2020. sponsored by CSIR New Delhi, Convener of the conference was Prof. Yuvraj S. Malghe, Prof.& Head Department of Chemistry, The Institute of Science, Mumbai, and the organizing secretary were Dr. Vandana Mohanrao Kamble and Dr. Vishal Banewar.

The conference was well attended by eminent academicians, faculty members, and students from reputed colleges and educational institutions. A hundred delegates participated, out of that Sixty-two Registered, thirteen students did oral presentations and Thirty-one students did poster presentations.

The conference was inaugurated by the Chief Guest Dr. Sameer Kulkarni, Director, Innovation, Incubation and Linkages, Mumbai University & Guest of Honor Prof. N.V.Thakkar, Ex-Prof. & Head, Department of Chemistry, The Institute of Science, Mumbai, on 13<sup>th</sup> February 2020 morning at the inaugural function and Mrs. Anita Rupavataram Director, NGMA, Mumbai. Dr. Vandana Mohanrao Kamble, the organizing secretary welcome all guests and delegates and gave an overview of the conference, and shared her views. All Dignitaries release the (Proceeding) Souvenir and CD of the National Conference. Prof. N.V.Thakkar, Enlight the audience. The inauguration was soon followed by the keynote address of Dr. Sameer Kulkarni. Dr. Jairam M. Khobragade, Director, The Institute of Science, Mumbai presided over the function and delivered the presidential address.

The first technical session started with Prof. Vivek Polshettiwar, Nanocatalysis Laboratory, Department of Chemical Sciences, Tata Institute of Fundamental Research (TIFR), Mumbai, India gave a talk on Black (nano)Gold Harvest Solar Energy and Transform CO<sub>2</sub> to Fuel products Chaired by Prof. Ajay Chaudhari, Head, Department of Physics, The Institute of Science, Mumbai.

After the lunch break, the Second technical Session started with Dr. C.V.Ramanna, CSIR-National Chemical Laboratory, Organic Chemistry Division, Pune, India gave a talk on Molecular Complexity via Metal catalysis Chaired by Dr. R.M. Patil, Department of Chemistry, The Institute of Science. And Dr. Atul Chaskar, National Centre for Nanoscience & Nanotechnology University of Mumbai, gave a talk on Highly Efficient Fluorescence Based Chemosensor for Ultralow Level Detection of Explosive Materials Chaired by Dr. Selby Jose Department of Mathematics, The Institute of Science, Mumbai. On the last of the first day of the conference, fifteen delegates presented their work by poster presentation examined by Dr. B.M. Patil and Dr. Pravin More.

On 14<sup>th</sup> February 2020 second day of the conference started with the third technical Session, Eight delegates presented their work in an oral presentation chaired by Dr. R.A.Tayade, Department of Chemistry, The Institute of Science, Mumbai

In the fourth technical session, five delegates presented their work in an oral presentation chaired by Dr. N.S. Chandan, Siddharth College of Arts, Science and Commerce Mumbai, and fifteen delegates presented their work by poster presentation examined by Dr. B.M. Patil and Dr. Pravin More

On the last IT talk of the second day Prof. S.S.Garje, Department of Chemistry, University of Mumbai, Mumbai, gave a talk on A Journey Through Nanomaterials Chaired by Dr. N.S. Chandan, Siddharth College of Arts, Science and Commerce Mumbai

During the valedictory program conducted in the evening, the certificates to the participants were given away by the Director, of The Institute of Science Dr. Jairam M. Khobragade. and Prof V.D. Mendhulkar, Registrar, Dr. Homi Bhabha State University Mumbai.

Dr. Vandana Mohanrao Kamble the organizing secretary read the summary report of the National Conference. Dr. Jairam M. Khobragade, Director, The Institute of Science, Mumbai presided over the function and delivered the presidential address as a concluding Speech.

Dr.Vishal Banewar the organizing secretary thanked all the delegates, the faculty, and students for their magnanimous support and assured them that The Institute of Science will organize more such activities in the future.













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### **Registration Form**

#### **“National Conference on Recent Trends in Chemistry-2020” [NCRTC - 2020] 13<sup>th</sup> and 14<sup>th</sup> February, 2020**

Name: .....

Faculty/Research Scholar/Industrial Delegate  
Department: .....

Affiliating University.....

Mobile: .....

E-mail: .....

Researchers, Teachers and students are invited to send their abstracts and full length papers by e-mail to [nrtc2020@gmail.com](mailto:nrtc2020@gmail.com) latest by 25<sup>th</sup> Jan. 2020.

#### **Address for communication**

Organizing Secretary (NCRTC-2020)  
Department of Chemistry, The Institute of Science  
Dr. Homi Bhabha State University, Mumbai  
15, Madam Cama Road, Fort, Mumbai-400032  
Cell: 09594399783, 9619047393, 8830968001  
E-mail id. [nrtc2020@gmail.com](mailto:nrtc2020@gmail.com)  
[vandana@iscm.ac.in](mailto:vandana@iscm.ac.in)  
[banewar@iscm.ac.in](mailto:banewar@iscm.ac.in)  
[bm.patil@iscm.ac.in](mailto:bm.patil@iscm.ac.in)

**Also researcher should register using the link given below**  
<https://docs.google.com/forms/d/1kOFgnbiRsI78UI4lxlpUhPd7lik8nPvaxO8Jh3VFSwQ/>

#### **Venue:**

Sir Cowasji Jahangir Public Hall, National Gallery of Modern Art (NGMA), Auditorium (2<sup>nd</sup> Floor)

M.G. Road, Fort, Mumbai 400 032

**Registration:** 10.00 a.m. on 13 Feb, 2020

#### **Registration Fees**

Faculty/ Delegate : Rs.1500/-, Student : Rs.750/-  
Industrial Delegates: Rs.2500/-

### **“National Conference on Recent Trends in Chemistry-2020”**

**[NCRTC - 2020]**

**13<sup>th</sup> and 14<sup>th</sup> February, 2020**

**Organized by**

**Department of Chemistry**

**The Institute of Science**

(Centre with Potential for Excellence' NAAC Re-Accredited 'A' Grade)

**Celebrating Centenary Year (1920-2020)**

**Dr. Homi Bhabha State University,**

**Mumbai**

*In collaboration with*

**National Gallery of Modern Arts, Mumbai**



**Chairman**

**Dr. Jairam. M. Khobragade**

**Director, The Institute of Science,  
Mumbai**

**Convener**

**Dr. Yuvraj S. Malghe**

**Prof. and Head, Department of Chemistry**

**Organizing Secretary**

**Dr. Vandana M. Kamble, Dr. Vishal W. Banewar**

**Joint-Organizing Secretary**

**Dr. Bhimrao M. Patil, Mr. Ravikumar M. Borade**



### Invitation

Dear colleagues, it gives immense pleasure to cordially invite and welcome you for the two Days National Conference on 'Recent Trends in Chemistry' (NCRTC-2020) Organized by Department of Chemistry, The Institute Of Science, Dr. Homi Bhabha State University Mumbai in collaboration with National Gallery of Modern Art, Mumbai to be held on 13<sup>th</sup> and 14<sup>th</sup> February 2020

### About the Institute

The Government of Maharashtra has established the Dr. Homi Bhabha State University, Mumbai as a Cluster University, with the Institute of Science, Mumbai; Elphinstone College, Mumbai; Sydenham College, Mumbai; and Secondary Training College, Mumbai. The Institute of Science, Mumbai is the Lead Institute of the University. It is a full-fledged premier post-graduate centre for teaching and research in science. From its inception in 1920 till date, the Institute has earned a very high reputation in scientific research and teaching. The Institute has been identified as a Centre with Potential for Excellence by UGC. Institute was reaccredited 'A' Grade by the National Assessment and Accreditation Council (NAAC) in 2014. The institute is celebrating its Centenary Year (1920-2020) and as a part of these celebrations many scientific activities are organized in Institute.

### About the Department of Chemistry

Department of Chemistry is on a mission to generate and nurture young minds with an aptitude for research and innovation. As a part of this mission, the department organizes invited lectures by eminent personalities, workshops and conferences for the benefit of the students. The Department is well equipped with sophisticated instruments required to conduct the advance research activities. The equipment's like FTIR, XRD, HPLC, - TG DTA, GC-MS, Cyclic Voltammetry, UV Spectrophotometer etc. are

available in laboratory. The Department has spacious laboratories and instrumentation room. The department offers M.Sc., M.Sc. (by research) and Ph.D. courses.

### About the Conference:

Chemistry is heart-core science in development of human life. The conference is organized with the aim to cover understand the advances and opportunities of sustainable solutions in the context of chemistry. It is involved in the continual advancement of technology. Collaborative approach for development of new and innovative techniques in chemical sciences will be rigorously discussed in the conference. The conference will provide a broad platform to the experts from academia as well as industry in the core areas of chemistry. It is expected to be fruitful and knowledge providing an insight into the novel integrated approaches.

### Conference will cover the following broad areas

- Organic Synthesis
- Sustainable Chemistry
- Catalysis
- Medicinal Chemistry
- Polymer Chemistry
- Coordination Chemistry
- Photochemistry
- Enzyme Catalysis
- Biosynthesis
- Green Chemistry
- Nanotechnology
- Food and Drug Analysis
- Material Science
- Environmental Science
- Advances in Analytical Instrumentation

### Call for Abstract:

Researchers, Teachers and students are invited to send their abstracts and full length papers by e-mail to [ncrtc2020@gmail.com](mailto:ncrtc2020@gmail.com) latest by 25<sup>th</sup> Jan. 2020. The text should be in MS-WORD, Times New Roman, font size 12 with single spacing on A-4 size paper

### Chief patrons:

**Prof. Suhas Pednekar**

*Hon'ble Vice Chancellor*

*University of Mumbai And Dr. Homi Bhabha State University, Mumbai*

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*Director, The Institute of Science, Mumbai*

### Convener

**Dr. Yuvraj S. Malghe**

*Prof. and Head, Department of Chemistry, The Institute of Science, Mumbai*

### Organizing Secretary

**Dr. Vandana M. Kamble, Dr. Vishal W. Banewar**

### Joint Organizing Secretary

**Dr. Bhimrao M. Patil, Mr. Ravikumar M. Borade**

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**Dr. Ravibabu A. Tayade**

**Dr. Ratnamala P. Sonawane**

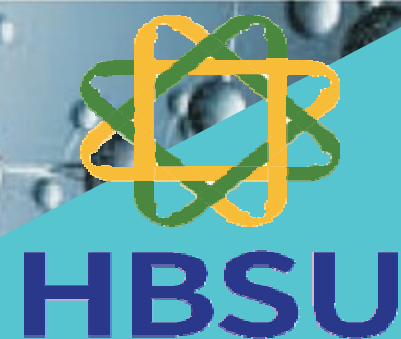
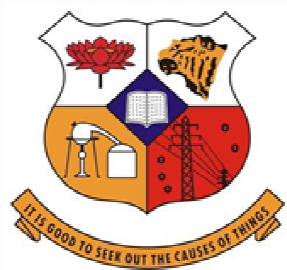
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**Mr. Sahebrao B. Kashid**

**Dr. Shubhangi P. Patil**

**Dr. Vikas M. Bangade**

**Mrs. Swati D. Vilhekar**



# National Conference on Recent Trends in Chemistry-2020

(NCRTC-2020)(13<sup>th</sup> and 14<sup>th</sup> February, 2020)

Organized by

Department of Chemistry

**The Institute of Science, Mumbai**

(‘College with Potential for Excellence’ NAAC Re-Accredited ‘A’ Grade)

*Celebrating Centenary Year (1920-2020)*

## Dr. Homi Bhabha State University, Mumbai

### Chief patrons

**PROF. SUHAS PEDNEKAR**

Hon'ble Vice-Chancellor,

Dr. Homi Bhabha State University, Mumbai

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**DR. D. R. MANE**

Director, Higher Education, Government of

Maharashtra

### Chairman

**Dr. Jairam M. Khobragade**

Director, The Institute of Science, Mumbai

### Convener

**Dr. Yuvraj S. Malghe**

Prof. and Head, Dept. of Chemistry

### Organizing Secretary Joint-Organizing Secretary

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**Dr. Bhimrao M. Patil**

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**Dr. G. R. Barabde**

**Dr. R. P. Sonawane**

**Dr. S R. Ambadekar**

**Mr. S. B. Kashid**

**Dr. V. M. Bangade**

**Dr. S.P. Patil**

**Mrs. S. D. Vilhekar**

### Call for Abstract

Researchers, Teachers and students are invited to send their abstracts and full length papers by e-mail to [ncrtc2020@gmail.com](mailto:ncrtc2020@gmail.com) latest by 25<sup>th</sup> Jan. 2020. The text should be in MS-WORD, Times New Roman, font size 12 with single spacing on A-4 size paper.

Also researcher should register using the link given below

<https://docs.google.com/forms/d/1kOFgnbiRsI78UI4lxlpUhPd7lik8nPVaXO8Jh3VFSwQ/>

**Registration:** 10.00 a.m. on 13 Feb, 2020

**Registration Fees:** Faculty/ Delegate: **Rs.1500/-**

Student : **Rs.750/-** Industrial Delegates: **Rs.2500/-**

### Venue:

Sir Cowasji Jahangir Public Hall,

National Gallery of Modern Art (NGMA),

Auditorium (2<sup>nd</sup> Floor)

M.G. Road, Fort, Mumbai 400 032

Dear colleagues, it gives immense pleasure to cordially invite and welcome you for the two Days National Conference on Recent Trends in Chemistry (NCRTC-2020) organized by Department of Chemistry, The Institute Of Science, Dr. Homi Bhabha State University Mumbai in collaboration with National Gallery of Modern Art, Mumbai held on 13<sup>th</sup> and 14<sup>th</sup> February 2020.

Chemistry is heart-core science in development of human life. The conference is organized with the aim to cover understand the advances and opportunities of sustainable solutions in the context of chemistry. The conference will provide a broad platform to the experts from academia as well as industry in the core areas of chemistry.

Conference will cover the following broad areas

- ◆ Organic Synthesis
- ◆ Catalysis
- ◆ Polymer Chemistry
- ◆ Coordination Chemistry
- ◆ Green Chemistry
- ◆ Material Science`
- ◆ Enzyme Catalysis
- ◆ Medicinal Chemistry
- ◆ Biosynthesis
- ◆ Photochemistry
- ◆ Nanotechnology
- ◆ Sustainable Chemistry

The Institute of Science, Mumbai is the Lead Institute of Dr. Homi Bhabha State University Mumbai, established by the Government of Maharashtra as a Cluster University. It is a full- fledged premier post-graduate centre for teaching and research in Science. From its inception in 1920 till date, the Institute has earned a very high reputation in Scientific Research and Teaching. The Institute is celebrating Centenary Year (1920-2020) and as a part of these celebrations many scientific activities are being carried out in collaboration with the Alumni Association (ISAA) and Golden Jubilee Trust Fund (GJTF).

### Address for communication

Organizing Secretary (NCRTC-2020)

Department of Chemistry, The Institute of Science,

Dr. Homi Bhabha State University Mumbai,

15, Madam Cama Road, Fort, Mumabi-400032

Cell: **09594399783, 9619047393, 8830968001**

E-mail id. [ncrtc2020@gmail.com](mailto:ncrtc2020@gmail.com), [vandana@iscm.ac.in](mailto:vandana@iscm.ac.in),

[banewar@iscm.ac.in](mailto:banewar@iscm.ac.in), [bm.patil@iscm.ac.in](mailto:bm.patil@iscm.ac.in)

**National Conference on Recent Trends in Chemistry 2020 (NCRTC-2020)**

**13<sup>th</sup> -14<sup>th</sup> February 2020**

**SCHEDULE**

**Day:1 13<sup>th</sup> February 2020**

<b>Time</b>	<b>Schedule</b>	
<b>10.00- 10.45</b>	<b>Registration and Breakfast</b>	
<b>10.45-11.45</b>	<b>Inaugural Function &amp;Keynote Address</b>	<p align="center"><b>Chief Guest:</b>  <b>Dr. Samir Kulkarni</b>                      Director Innovation, Incubation and Linkages, Mumbai University</p> <p align="center"><b>Guest of Honor</b>  <b>Prof. N.V.Thakkar</b>                      Ex-Prof. &amp; Head, Department of Chemistry,                      The Institute of Science, Mumbai-32                      Ex-COE, Shivaji University, Kolhapur                      Ex-O.S.D., Central University of Rajasthan</p>
<b>Technical Session-I</b>		
<b>12.00-1.00</b>	<b>IT-1 Black (nano)Gold Harvest Solar Energy and Transform CO<sub>2</sub> to Fuel</b>	<b>Prof. Vivek Polshettiwar,</b> Nanocatalysis Laboratory, Department of Chemical Sciences, Tata Institute of Fundamental Research (TIFR), Mumbai, India
<b>1.00- 1.45</b>	<b>Lunch Break</b>	
<b>Technical Session – II</b>		
<b>1.45-2.45</b>	<b>IT-2</b>	<b>Dr. C.V.Ramanna</b> CSIR-national Chemical Laboratory, Organic Chemistry Division Dr.Homi Bhabha Road, Pune- 411008
<b>2.45-3.45</b>	<b>IT-3</b>	<b>Dr. Atul Chaskar</b> National Centre for Nanoscience & Nanotechnology University of Mumbai, Mumbai – 400098
<b>3.45-4.00</b>	<b>Tea Break</b>	
<b>4.15- 4.45</b>	<b>Poster presentations</b>	<b>P-1 to P-15</b>

**Day:2    14<sup>th</sup> February 2020**

<b>Time</b>	<b>Schedule</b>	
<b>10.00-10.30</b>	<b>Breakfast</b>	
<b>Technical Session-III</b>		
<b>10.30 -12.00</b>	<b>Oral presentations</b>	<b>O-1 to O-8</b>
<b>Technical Session-IV</b>		
<b>12.00 -1.00</b>	<b>Oral presentations</b>	<b>O-9 to O-13</b>
<b>1.00 -1.45</b>	<b>Lunch Break</b>	
<b>1.45-2.30</b>	<b>Poster presentations</b>	<b>P-16 to P-30</b>
<b>2.30 -3.30</b>	<b>IT-4 Polymer Chemistry</b>	<b>Prof. S.S.Garje Department of Chemistry, University of Mumbai, Mumbai - 400098</b>
<b>3.30 -3.45</b>	<b>Tea Break</b>	
<b>3.45 -4.30</b>	<b>Valedictory Function</b>	

# National Conference on Recent Trends in Chemistry

## [NCRTC- 2020]

13<sup>th</sup> and 14<sup>th</sup> February, 2020

Organized by

Department of Chemistry

# The Institute of Science, Mumbai

## Dr. Homi Bhabha State University, Mumbai

(Institute with Potential for Excellence  
& NAAC reaccredited 'A' Grade)



in collaboration with

National Gallery of Modern Art, Mumbai  
Ministry of Culture, Government of India



राष्ट्रीय आधुनिक  
कला संग्रहालय  
NATIONAL GALLERY  
OF MODERN ART



Convener

**Prof. Y.S.Malghe**

Prof. & Head, Department of Chemistry

Organizing Secretary

**Dr. Vandana Kamble**

**Dr. Vishal Banewar**

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- ◆ **Prof. G. S. Gokavi**  
Head, Dept of Chemistry, S.U. Kolhapur
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Dept of Chemistry, University of Mumbai
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TIFR, Mumbai.
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Savitribai Phule Pune University, Pune
- ◆ **Prof. Ram Lokhande**  
Jaipur National University, Rajasthan
- ◆ **Anita Rupavataram**  
Director, NGMA, Mumbai

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Vice Chancellor  
Dr. Homi Bhabha State University, Mumbai

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Government of Maharashtra

**Dr. D. R. Mane** Director,  
Higher Education Government of  
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**Mrs. S. D. Vilhekar**



सत्यमेव जयते



Dr Homi Bhabha State University

# Dr. Homi Bhabha State University, Mumbai The Institute of Science

(‘Centre with Potential for Excellence’ NAAC Re-Accredited ‘A’ Grade)



## MESSAGE

I am happy that the Department of Chemistry of our Institute is organizing a two day National Conference on Resent Trends in Chemistry on 13<sup>th</sup> & 14<sup>th</sup> February, 2020 in collaboration with National Gallery of Modern Art, Mumbai sponsored by CSIR, New Delhi & Golden Jubilee Trust Fund, Institute of Science, Mumbai.

Resent Trends in Chemistry represents a new global platform for discussion of significant and transformative concepts in all phases of chemistry. Undoubtedly, uncovering new frontiers in chemistry will have significant impact on many of the imposing challenges facing our world today.

I am sure that during this national conference number of new ideas will emerge out and will be discussed. This will definitely open the avenues for upcoming researchers, especially to young researchers which are future of country.

I appreciate the efforts taken by all members of organizing committee. I wish the conference a grand success.

**Dr. Jairam M. Khobragade**

**Director**

**Institute of Science, Mumbai-32**

S.N.	No.	Title & Name of Authors	P. No.
1.	IL-1	Black (nano) Gold Harvest Solar Energy and Transform CO <sub>2</sub> to Fuel <i>Prof. Vivek Polshettiwar</i>	1
2.	IL-2	Molecular Complexity via Metal catalysis <i>Dr. C.V Rammanna</i>	2
3.	IL-3	Highly Efficient Fluorescence Based Chemosensor for Ultralow Level Detection of Explosive Materials <i>Dr. Atul Chaskar</i>	3
4.	IL-4	A Journey Through Nanomaterials <i>Prof. S.S. Garje</i>	4
5.	OP-1	Facile synthesis of bare TiO <sub>2</sub> nanoparticles and TiO <sub>2</sub> @Pd nanocomposites and their application as catalysts for reduction of nitro aromatic compounds, <i>Darshita Kedare, Aleem Ansari, and Shivram S. Garje</i>	5
6.	OP-2	Synthesis and characterization of CoS nanoparticles by solvothermal decomposition of molecular precursor and their energy storage application, <i>Archana Raut, Rashmi A. Badhe, and Shivram S. Garje</i>	6
7.	OP-3	Synthesis of Cellulose Adipate Derivatives <i>Nilanjana Kar, Haoyu Liu, and Kevin J. Edgar</i>	7
8.	OP-4	Synthesis of Benzimidazole Derivatives under Solvent Free Condition <i>Gurumeet C. Wadhawa, Vitthal S. Shivankar, Shakuntala S.Patil, Charansingh H., Gill and Laxman V Gavali</i>	8
9.	OP-5	Sulphonated graphene oxide mediated efficient synthesis of 1,8-dioxooctahydroxanthene derivatives. <i>Mantosh B. Swami, Sudhakar G. Patil</i>	9
10.	OP-6	The Comparison of GC-MS Data of Leaves of Basil ( <i>Ocimum sanctum</i> Linn) Plant Grown in Different Soil Combinations, <i>Preeti Rai, Harsha Chatrath</i>	10
11.	OP-7	Alternative liquid chromatographic method to gas chromatography for simultaneous determination of dimethyl sulfoxide and n,n-dimethyl formamide in pharmaceuticals, <i>Ramesh Gadikar</i>	11
12.	OP-8	Effect of ceramics on plasticizer <i>Pranjali T. Maskar and Sanjay Bapurao Ghorpade</i>	12
13.	OP-9	Nitration of substituted anisoles with dilute HNO <sub>3</sub> : Developing a sustainable approach for the chemical industry, <i>Kshitij J. Chavan, Uday C.Mashelkar</i>	13
14.	OP-10	Synthesis, Characterization And Biological Activities Of Bidentate Ligand And Its Metal Complexes Prepared From Diacetylmonoxime <i>Vaishali H. Rajurkar</i>	14
15.	OP-11	Formulation of herbal based hair oil, <i>Rupali N.Agme, Vaishali A.Ghodke, S.S.Makone</i>	15
16.	OP-12	Concentrated Solar Radiation Enhanced one pot synthesis of DES and N-Phenyl Phthalimide, <i>Prashant Vasantrao Ghorpade, Ganapati Subray Shankarling</i>	16
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IL-01

**Black (nano) Gold Harvest Solar Energy and Transform CO<sub>2</sub> to Fuel**

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**Abstract:**

Energy and environment are two of our critical societal challenges. The use of hybrid nanomaterials to harvest solar energy as well as capture and conversion of CO<sub>2</sub> seems to be the best way to combat climate change. We recently reported the synthesis of a new class of dendritic fibrous nano-silica (DFNS).<sup>1-10</sup> Fibrous morphology observed in these nanospheres has not been seen before in silica materials. The uniqueness of DFNS is, its high surface area is by virtue of its fibrous structure instead of pores (unlike MCM-41 and SBA-15 silicas), and hence easily accessible. More than 100 groups worldwide are now using our patented<sup>1b</sup> DFNS for various applications such as catalysis, solar-energy harvesting, energy storage, self-cleaning antireflective coatings, surface plasmon resonance-based ultrasensitive sensors, CO<sub>2</sub> capture, and biomedical applications.<sup>1d</sup> We showed successful utilization of DFNS for a range of important catalytic applications such as metathesis, hydrogenolysis, oxidation, hydrogenation, coupling reactions etc<sup>2-8</sup> as well as for CO<sub>2</sub> capture.<sup>9</sup> We have also developed a new method of fabricating active photocatalysts by TiO<sub>2</sub> coating of DFNS<sup>10</sup> and plasmonic black gold.<sup>11</sup> In this seminar, I will discuss these recent results.

**SHINE ON BLACK GOLD FOR A BRIGHTER FUTURE**

When exposed to light, gold (Au) nanoparticles (NPs) generate catalysing "hot" electrons and "hotspots"

Au NP "Hot" electron "Hotspot" Colloidosome

Black (nano)gold can be used for solar energy harvesting

To improve the catalyst's efficiency, "hotspots" in colloidosomes can be tuned by tuning the size and gaps between Au NPs

- CO<sub>2</sub> conversion
- Fuel CH<sub>4</sub>
- Protein unfolding
- Aldehyde hydrosilylation
- Alcohol oxidation
- Seawater desalination

The use of black gold can help us move one step closer to combating climate change

Chemical Science PICK OF THE WEEK ROYAL SOCIETY OF CHEMISTRY

Plasmonic colloidosomes of black gold for solar energy harvesting and hotspots directed catalysis for CO<sub>2</sub> to fuel conversion  
Dhiman, Maity et al. (2019) | DOI: 10.1039/C9SC02369K

**IL-02**

**Molecular Complexity via Metal catalysis**

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**Dr.Homi Bhabha Road, Pune-411008**

**IL-03**

**Highly Efficient Fluorescence Based Chemosensor for Ultralow Level  
Detection of Explosive Materials**

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**National Centre for Nanosciences and Nanotechnology,  
University of Mumbai.**

**Abstract:**

Nowadays terrorism is the serious issue in front of mankind. Use of explosive bombs in attack killed tens of thousands of people as well as caused enormous property damage. Most commonly used explosives are nitro substituted explosives (NSE). Traditional techniques used for explosive detection lacks in the selectivity and sensitivity. Currently available method for the detection of explosives are Ion mobility spectroscopy, Gas chromatography mass spectrometry, surface plasmon resonance etc. which cannot be used for on field detection. These NSEs are extremely sensitive to shock, friction and impact, therefore detection methods that permits contact free analysis are desirable. Thus remote, highly sensitive, selective and low cost detection of explosive is very necessary. We have synthesized novel materials having tunable optoelectronic properties and well characterized by various spectrochemical methods. In this study we propose the efficient and low cost spectroscopic (fluorescence quenching) approach for the successful detection of the NSEs like RDX, TNT, DNT, PA etc. The present investigation reveals the excellent results for the detection of different NSEs with lower limit up to 5 ppm. The material and methodology used in this study shows the potential candidature for the on field explosive sensing device fabrication.

**IL-04**

**A Journey Through Nanomaterials**

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Mumbai- 400098**

**Abstract**

Nanomaterials are cornerstones of nanoscience and nanotechnology. Nanotechnology is an interdisciplinary area. It is expected that nanotechnology will change all aspects of human life more profoundly than many other developments of the past. Nanotechnology is the science of the nanoscale: objects around a nanometer in size. Our ability to construct large, intricate structures with nanometer precision is rapidly changing, and consists of top-down reductive approaches and bottom-up additive approaches. This field revolutionized the preparation of methods of materials and functionality of devices. The research and development of nanotechnology is very active globally, and nanotechnologies are already used in hundreds of products, including sunscreens, cosmetics, textiles, and sports equipment. Nanotechnology is also being developed in the medical field such as in drug delivery, biosensors, and other biomedical applications. Further, nanotechnologies are also being developed for use in environmental applications, e.g., clean-up of environmental pollutants.

The organic pollutants, hazardous materials and industrial toxic effluents in water such as pigment, dyes, explosives from plastic, pharmaceutical and pesticide industries etc. have major environmental issues [1-2]. For example, various pigments manufacturing, leather tanning, metal finishing, electroplating industries make use of toxic hexavalent chromium, Cr(VI). The pollutants from organic compounds such as nitro aromatic compounds and organic dyes have drastically increased due to the growth in industrialization. The derivatives of nitro aromatic compounds are highly toxic, more stable in aqueous solution and are not easily degradable. To overcome these problems, development of most promising nanomaterials for has great significance.

Other areas where nanomaterials are finding applications is the energy storage devices, sensors, etc. These materials are finding applications in power source devices like supercapacitors. They have been paid attention over the last decade due to their characteristics such as long cycle life, high power density, fast charge/discharge rates relative to batteries, etc. [3-4]. Nanocrystalline transition metal oxides such as TiO<sub>2</sub> NPs have attracted special attention owing to their exceptional properties, such as low cost, high stability, high chemical inertness, biocompatibility and non-toxicity [5-6].

OP-1

**Facile synthesis of bare TiO<sub>2</sub> nanoparticles and TiO<sub>2</sub>@Pd nanocomposites and their application as catalysts for reduction of nitro aromatic compounds**

Darshita Kedare, Aleem Ansari, and Shivram S. Garje \*

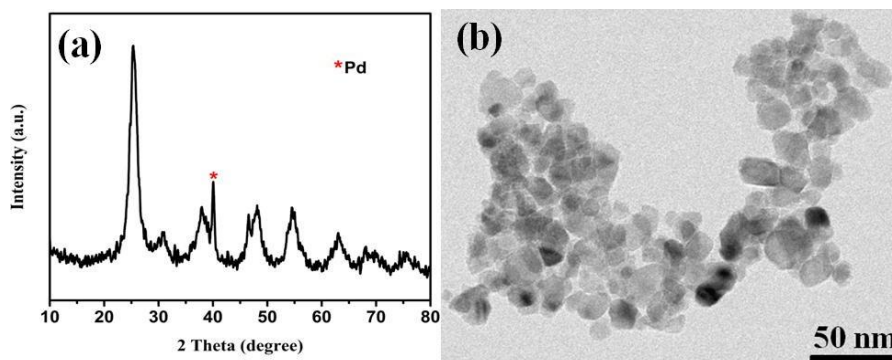
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**Abstract:**

The organic pollutants, hazardous materials and industrial toxic effluents in water have major environmental issues. The organic derivatives of nitroaromatic compounds are highly toxic, more stable in aqueous solution and are not easily degradable. For the reduction of nitroaromatic compounds to their amino aromatic compounds various metal oxide/sulfide semiconductor nanoparticles such as TiO<sub>2</sub>, NiS, Pd, Fe<sub>2</sub>O<sub>3</sub> and ZnO have been used [1-3]. In this work, we report the synthesis of bare TiO<sub>2</sub> nanoparticles and TiO<sub>2</sub>@Pd nanocomposites using titanium isopropoxide and palladium chloride via solvothermal decomposition which gets completed within 2 h under inert condition. All these materials were characterized by various techniques such as powder X-ray diffraction (PXRD), Raman spectroscopy, transmission electron microscopy (TEM), UV-Visible spectroscopy and photoluminescence studies. The peaks observed at  $2\theta = 40.1^{\circ}$  (Pd peak Fig. 1 a) in XRD confirms the successful formation of TiO<sub>2</sub>@Pd nanocomposites. From TEM images (Fig. 1b), it is observed that TiO<sub>2</sub> nanoparticles have spherical morphology.

The as-prepared nanoparticles have been further utilized for the reduction of nitroaromatic compounds and it has been observed that TiO<sub>2</sub>@Pd



nanocomposites shows excellent catalytic activity compared to bare TiO<sub>2</sub> nanoparticles.

**Fig.1** (a) XRD pattern of TiO<sub>2</sub>@Pd nanocomposites and (b) TEM image of TiO<sub>2</sub> nanoparticles.

**References:**

1. A. Arabzadeh and A. Salimi, *J. Colloid Interface Sci.*, **2016**, 479 43.
2. B. Pant, N. A. M. Barakat, H. R. Pant, M. Park, P. S. Saud, J. W. Kim and H. Y. Kim, *J. Colloid Interface Sci.*, **2014**, 434, 159.

OP-02

**Synthesis and characterization of CoS nanoparticles by solvothermal decomposition of molecular precursor and their energy storage application**

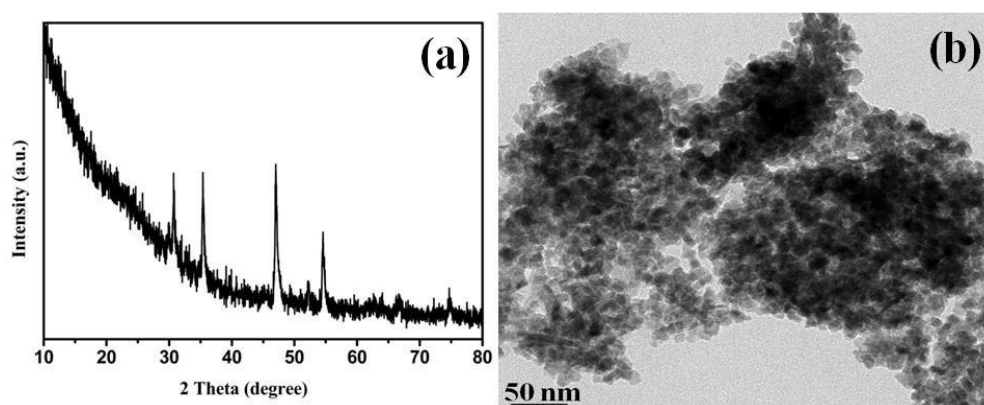
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**Abstract:**

Transition metal sulfides/oxides have attracted much attention of researcher as supercapacitor materials due to their high theoretical capacitance, better electrical conductivity and high charge storage capacity [1-3]. Here, we report a facile synthesis of CoS nanoparticles via solvothermal route using  $\text{CoCl}_2(3\text{-Chloro benzaldehydethiosemicarbazone})_2$  as molecular precursor. The as-synthesized materials were characterized by various techniques such as powder X-ray diffraction, Fourier transform infrared spectroscopy, photoluminescence spectroscopy, transmission electron microscopy and Raman spectroscopy. The XRD pattern confirms the formation of cubic phase CoS nanoparticles as shown in Fig. 1a. TEM image shows the spherical morphology having average particle size of 15-20 nm as shown in Fig. 1b. Further, this CoS nanoparticles are used as electrode materials in supercapacitors for energy storage applications. The electrochemical properties of the material were studied by cyclic voltammetry, galvanostatic charge-discharge and electrochemical impedance spectroscopy. The specific capacitance calculated was found to be  $335.1 \text{ F g}^{-1}$  at  $1 \text{ A g}^{-1}$  using 3 M KOH aqueous electrolyte solution. Thus, the prepared material can be used as a good electrode material for energy storage application.



**Fig.1**(a) XRD pattern of CoSnanocomposites and (b) TEM image of CoSnanoparticles.

**References**

1. C. Zhao, Y. Zhou, Z. Ge, C. Zhao, X. Qian, *Carbon*, 127 (2018) 699.



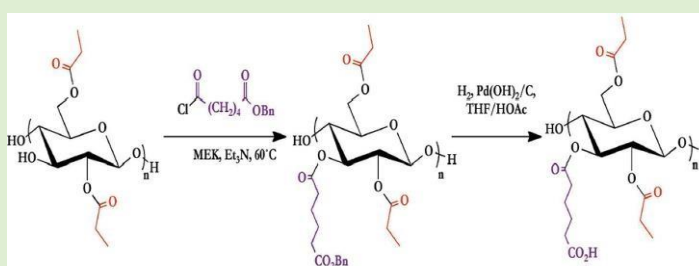
### OP-03

## Synthesis of Cellulose Adipate Derivatives

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Cellulose esters containing adipates and other ester groups are synthesized by the reaction of commercially available cellulose esters in solution with the benzyl monoester of adipoyl chloride. The products, cellulose adipate esters in which the distal end of the adipate moiety is a benzyl ester, were easily converted to cellulose adipate derivatives by Pd-catalyzed hydrogenation. These cellulose adipate derivatives are promising biopolymers for drug delivery and other applications in which water-dispersion or swelling are desired.

**OP-04**

**Synthesis of Benzimidazole Derivatives under Solvent Free Condition**

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**Professor Department of chemistry Babasaheb Ambedkar Marathwada University  
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**Abstract**

Plant assisted zinc oxide nanoparticles are good, effective and reusable cost effective catalyst for the selective synthesis of 1,2-disubstituted benzimidazoles from o-phenylenediamine and aromatic aldehydes in an excellent yield (80-90%) using sonication under solvent-free conditions. The present methodology shows some specific advantages such as mildness, fast reactions and enhanced selectivity under solvent-free conditions.

**Keywords** -sonication assisted synthesis, catalyst, selectivity, benzimidazoles, aromatic aldehyde

**OP-05**

**Sulphonated Graphene Oxide Mediated Efficient Synthesis Of 1,8-Dioxooctahydroxanthene Derivatives.**

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Maharashtra Udaygiri Mahavidyalaya, Udgir, Maharashtra.

**Abstract:**

1,8-dioxooctahydroxanthene derivatives has been prepared from substituted aryl aldehyde and 5,5-dimethyl 1,3-cyclohexanedione by using sulphonated graphene oxide. The catalyst employed is heterogeneous, highly efficient and reusable. The Prepared catalyst and all xanthenedione derivatives were characterized by various spectroscopic techniques.

**Key words:** Sulphonated graphene oxide, efficient synthesis, 1,8-dioxooctahydroxanthene, dimedone.

OP-06

**The Comparison of GC-MS Data of Leaves of Basil (*Ocimum sanctum*  
*Linn*) Plant Grown in Different Soil Combinations**

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**Abstract:**

Basil (*Ocimum sanctum Linn*) is the native of Indian subcontinent and widely cultivated in the Southeast Asian countries and belongs to family Lamiaceae. Basil (*Ocimum sanctum Linn*) is well known for its medicinal properties due to presence of essential oils and phytochemical constituents present in this plant. Its culinary uses in different parts of the world are also well known. Different varieties of Basil has different taste and aroma due to the chemical components present the particular plant. *Ocimum sanctum Linn* is rich source of manganese and vitamin K, copper, vitamin A and vitamin C is also present in basil plant along with calcium, iron, magnesium, folate and omega-3 fatty acids. *Ocimum sanctum Linn* is rich in antioxidants, possess anti-aging and antibacterial, properties, helps in reducing inflammation and swelling.

Oleanolic acid, ursolic acid, rosmarinic acid, eugenol, carvacrol, linalool and  $\beta$ -caryophyllene are some of the phytochemical constituents which are present in *Ocimum sanctum Linn*. Essential oils such as eugenol,  $\beta$ -elemene, caryophyllene and germacerene are also present.

The main purpose of this study is to understand how different chemicals and composition of soil effect on plants growth with variation in gas chromatography-mass spectrometry analysis. Two plants grown in normal soil and combined with laboratory chemical waste has shown different results. This will help us to study about different plants under different soil environment morphologically as well as with respect to chemical constituents present in the plant.

**Keywords:** *Ocimum sanctum Linn*, GC-MS, soil combination, essential oils, chemical constituents.

**OP-07**

**Alternative Liquid Chromatographic Method To Gas Chromatography  
For Simultaneous Determination Of Dimethyl Sulfoxide And N,N-  
Dimethyl Formamide In Pharmaceuticals.**

**Ramesh Gadikar**

**Abstract:**

A simple, accurate, and precise validated method for simultaneous determination of dimethylsulfoxide (DMSO) and N, N-dimethyl formamide in pharmaceuticals. Mixture of 10 mM each of monobasic phosphate and dibasic phosphate in 0.1% triethylamine adjusted pH 2.3 with orthophosphoric acid is used as a buffer (Mobile phase A) in mobile phase with acetonitrile (Mobile phase B). Separation of DMSO and N, N-dimethyl formamide achieved within 10 min using L1 column of 250 mm × 4.6 mm, 5 μ dimension. The flow rate was 1.0 mL/min, and 210 nm was the detector wavelength. The method has been extensively validated as per the International Conference on Harmonization (ICH) guideline for parameters such as specificity, linearity, precision, accuracy, solution stability, filter compatibility, and robustness. The accuracy for DMSO and N, N-dimethyl formamide is 101.0% and 100.8%, respectively. The correlation coefficient for DMSO and N, N-dimethyl formamide is 1.00 and 0.99, respectively, all other validation parameters found okay. The literature survey revealed that there is no method reported for simultaneous determination of DMSO and N, N-dimethyl formamide in pharmaceuticals by using liquid chromatography.

The proposed method is very simple, accurate, precise, and alternative option for gas chromatography. Hence, this validated novel liquid chromatographic method can be easily and conveniently adopted for routine analysis of DMSO and N,N-dimethyl formamide content from pharmaceuticals.

**Keywords:** Development, Dimethyl sulfoxide, N,N-dimethyl formamide, Reverse phase, Validation.

**OP-08**

**Effect of ceramics on plasticizer**

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**Abstract:**

Ceramics are metallic as well as non-metallic compounds incorporated in lubricating oil. Oil acts as a plasticiser in the compounding of rubber. Ceramic powder is prepared by gel combustion method in which oxidant and fuel ratio is fixed. Nitrate salts of barium, iron, copper and silver are mixed in aqueous medium, suitable solvent is added in aqueous mixture. After heating the mixture on hot plate up to 100 °C. Semisolid mass dried up to 150°C for 1 hr, homogeneous, lustrous and uniform powder is prepared. This is highly effective to decrease saponification value of oil which acts as a plasticiser in rubber like material. Lesser the saponification value, better the quality of oil. Saponification value indicates number of milligrams of KOH required to saponify one gram of oil. Lubricating capacity of oil is increased after application of ceramic in oil. Viscosity value is not considerably changed.

**Keywords:** Nitrate salts, oil, citric acid, hydrochloric acid, potassium hydroxide.

**OP-09**

**Nitration of substituted anisoles with dilute HNO<sub>3</sub>:  
Developing a sustainable approach for the chemical industry**

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**Abstract:** The chemical industry is highly competitive and there is a need to develop processes which are not only efficient, cost effective but sustainable as well. The present work involves the use of analytical instrumentation and recycle strategy in the nitration of substituted anisoles using dilute nitric acid . The nitration of ortho and para N-acetyl amino anisoles, carried out under heterogeneous conditions, was studied quantitatively, using dilute HNO<sub>3</sub> as the sole nitrating agent. The conversion of the reactants and the product distribution observed, was quantified, by GLC using internal standard method. The nitration of 4-N-acetyl amino anisole was carried out under aqueous heterogeneous conditions using 30% HNO<sub>3</sub> and a successful recycle strategy for the used nitric acid solution in the reaction was developed. In the nitration of 2-N-acetyl amino anisole, the effect of concentration of the dilute HNO<sub>3</sub> on the conversion of the substrate and the isomeric product distribution was studied quantitatively, and the reaction was found to be diffusion controlled. All the reactions were carried out under semibatch mode conditions considering the complexities in heterogeneous nitrations and the accompanying, oxidation side reaction. The present study is significant, because Green Chemistry principles emphasize a quantitative approach and in process monitoring of chemical processes using analytical techniques. Further, the approach developed is such that, it can be easily absorbed in the existing setup.

**Key words:** GLC: Gas Liquid Chromatography

**OP-10**

**Synthesis, Characterization And Biological Activities Of Bidentate  
Ligand And Its Metal Complexes Prepared From Diacetylmonoxime**

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**Abstract:**

Reaction between diacetylmonoxime, 3/4-hydroxyphenyl and some hydrated metal salts of Mn<sup>II</sup> gives complexes of the type [MnL<sub>2</sub>2(H<sub>2</sub>O)]. The ligands and the complexes were characterised by elemental analysis, magnetic susceptibility measurements and spectral (I.R., U.V.-Vis., N.M.R.) analysis. I.R. and U.V-Vis. spectra show the ligands are bidentate. The spectral and magnetic study suggests octahedral geometry for metal complexes. Spectroscopic study indicate coordination occurs through oxime oxygen after deprotonation and nitrogen of azomethine. Anti-bacterial and anti-fungal activity of the schiff base ligands and their metal complexes have been studied using the agar well diffusion method and ditch diffusion method. Ligands and metal complexes shows activity against *S. aureus* (gm positive), *P. aeruginosa* (gm negative), *Aspergillusniger* and *Candidaalbicans*.

**Keywords :** Transition metal complex, antifungal and antibacterial activity.



**OP-11**

**Formulation Of Herbal Based Hair Oil**

**Rupali N.Agme, Vaishali A.Ghodke,S.S.Makone, School of Chemical Sciences, SRTMU,  
Nanded**

**Abstract**

The present study is focused on the development and formulation of herbal based hair oil based upon the ethanobotanical and traditional knowledge of medicinal herbs which may play significant role in protecting hair fall. Now a day's, today's generation is facing lots of hair loss problems and whitening of hair which may be due to several reasons like hereditary, side effects of medicine, hormonal imbalance, stress and many fungal infections too. The commercial hair products available may sometimes cause adverse effects and condition may worse, hence by considering the fact, the hair oil is formulated by combination of four traditional medicinal herbs like *Murraya Koenigii*, *Trigonella Foenum-Graecum*, *Cocos nucifera* and *Phyllanthus Emblica* with traditional medicinal history obtained from ethnobotanical studies. This product is proposed for its excellent positive results.

**Keywords**

Traditional knowledge, hair fall, hair oil, *Murraya Koenigii*, *Cocos nucifera*.

OP-12

**Concentrated Solar Radiation Enhanced one pot synthesis of DES and  
N-Phenyl Phthalimide**

**Prashant Vasant Rao Ghorpade, Ganapati Subray Shankarling**

**Ph. D. Student GSS Group, Institute of Chemical Technology, Matunga, Mumbai.**

**Abstract:**

A simple, rapid and energy efficient process has been developed for the synthesis of ChCl-Urea based Deep Eutectic Solvents (DES) using concentrated solar radiations (CSR). The DES thus synthesized has been successfully used for the synthesis of N-phenyl phthalimide from aniline and phthalic anhydride under CSR. The use of CSR greatly influenced on reaction rate as reaction proceeded in fifteen minutes. The product formed by CSR method were evaluated using TGA, XRD, and microscopic study and were found to be comparable with that obtained by conventional heating method. The present protocol covers various principles of green chemistry as it utilizes greener and clean source of energy, time saving and energy efficient process (almost 91% of energy can be saved).

OP-13

Metabolite profiling of *Vernonia anthelmintica* using LC-MS

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**Abstract:**

*Vernonia anthelmintica* seeds are used as a traditional medicine in Ayurveda. Methanolic and n-hexane extract of *Vernonia anthelmintica* was taken for investigation of secondary metabolite. Extracts were analysed using reversed-phase ultra-high-performance liquid chromatography coupled with electrospray ionization quadrupole time-of-flight mass spectrometry detection in the negative as well as positive ion mode was employed. Number of secondary metabolites found in methanolic extract were 273, whereas 229 in n-hexane extract.

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**PP-01**

**Study of vegetable oil based in UV curable polyurethane coatings**

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**Abstract:**

Biobased UV curable polyurethane acrylates were synthesized by vegetable oil based polyols like monoglyceride and fatty amide. The chemical end groups (acid value and hydroxyl value) analysis. The polyols were characterized by FTIR techniques. This polyols were incorporated in a urethane acrylate oligomer and photoinitiator for UV curable coatings. The mechanical as well as chemical properties such as adhesion, pencil hardness, and gloss of UV-curable coatings were studied. Furthermore, the cured films were evaluated for thermal stability by thermogravimetric analysis.

**Keywords:** Biobased coating, FTIR, adhesion, pencil hardness, UV curing

PP-02

6*H*-indolo(2,3-*b*)quinoxaline derivative as Blue-Red Emmissive  
Ambipolar Materials for Organic Electronics

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**Abstract:**

Small organic molecules consisting of donor-acceptor (D-A) system has received great attention due to its structure-property relationship and explored for various applications in the field of optoelectronics like organic light-emitting diodes (OLEDs), organic field effect transistors (OFETs), dye-sensitized solar cells (DSSCs) and sensors. In this work, a series of five novel dyes based on indolo[2,3-*b*]quinoxaline skeleton, derived from benzophenone, have been synthesised using cyclo condensation reaction in good yield and fully characterized. The photophysical, electrochemical and thermal studies of synthesized dyes have been done. Their absorption and fluorescence properties were investigated in various solvents and in neat solid film and found to possess characteristic electronic absorption and emission spectra which depend on the nature of solvent. Compounds show intramolecular charge transfer transitions (ICT) in the range of 411–423 nm with high molar absorption coefficient ( $\epsilon$ ). These indoloquinoxaline derivatives emit blue-red fluorescence with emission maxima in the range of 434–640 nm in solution and neat solid film. Compound **2** and **3** which show intense emission in neat solid film were selected to evaluate aggregation-induced emission (AIE) characteristics. The compounds were dissolved in different THF/water mixture (0–100%) and their photophysical properties were studied. Its results revealed the existence of AIE effect in **2** and **3**. The HOMO-LUMO energy level for **1–5** obtained by CV were found in the range of –5.44 to –5.69 eV and –3.60 to –3.70 eV and comparable with reported ambipolar materials. Thermal studies show that the decomposition temperature corresponds to 5% and 10% weight losses were found in the range from 261–350 °C and 286–335 °C respectively which reveal good thermal stability. All above factors make these materials suitable for their applications in optoelectronics.

**Keywords:** Indolo-quinoxaline, Intramolecular charge transfer, Donor-Acceptor architecture, HOMO and LUMO energy levels, ambipolar materials.

**References:**

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PP-03

**EXPLORING HYDROGEL BASED METHOD FOR BACTERIAL  
PRESERVATION**

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**Abstract:**

When we talk about preservation of living cells we aimed to maintain long term viability without any change in their inherent characteristics. Currently lyophilised and cryopreserved cultures are used in most industries whereas small laboratories are still relies on traditional method of periodic transfer for culture preservation. Each of this technique has its own disadvantages and in the present study we tried to bridge the gap between them by overcoming those disadvantages. Hydrogels are organic 3-dimensional network of hydrophilic polymers that have unique physical and chemical properties. They have acquired much attention in the field of tissue engineering and regenerative medicine due to their biocompatible nature.

In this study, we tried to explore potential of hydrogel to develop a new system of bacterial preservation. We used ulvan and agar as representative hydrogels and *Escherichia coli* as a representative of gram negative bacteria. We developed a system of dried hydrogel disc seeded with bacterial cells after standardization of various parameters such as concentration of hydrogel and bacterial cell, drying time and temperature. Characterization of physical properties like viscosity and water holding capacity of both the hydrogels were carried out. This study showed that the cell viability was retained for a longer period within the hydrogel system in comparison to the system without hydrogel. In particular ulvan hydrogel was found to be more effective than agar in retaining the maximum cell viability in dried hydrogel discs and this may be attributed to its high water holding capacity.

**Keywords:**

Hydrogel, preservation, agar, ulvan, bacterial cell viability

**PP-04**

**Zn(II) complexes of thiazolylazo dye with N<sub>3</sub><sup>-</sup> or NCS<sup>-</sup> and triphenylphosphine as coligands: Synthesis, spectroscopic and thermal properties.**

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**Abstract:**

A series of Zn(II) complexes of the type [M(L<sub>1</sub> or L<sub>2</sub>)(PPh<sub>3</sub>)<sub>2</sub>(N<sub>3</sub>)<sub>2</sub>] (1a-2a) and [M(L<sub>1</sub> or L<sub>2</sub>)(PPh<sub>3</sub>)<sub>2</sub>(NCS)<sub>2</sub>] (1b-2b) (where L<sub>1</sub>=4-(4'-phenyl,2'-thiazolylazo)nitrobenzene, L<sub>2</sub>=4-(4'-phenyl,2'-thiazolylazo)anisole have been prepared and characterized on the basis of their micro analytical data, spectroscopic, and photo physical properties. On the basis of electronic spectra measurement octahedral geometry has been proposed for complexes. Complexes exhibit blue green emission with high quantum yield.

**Keywords:** Thiazolylazo complexes, spectral studies, luminescence spectra

**PP-05**

**Excellent High-Temperature CO<sub>2</sub> Capture Capacity Using Lithium Silicates Nanomaterial with Faster Kinetics and Unprecedented Stability**

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**Abstract:**

An excessive amount of CO<sub>2</sub> is the main cause of climate change, and hence, its reduction from the Earth's atmosphere is key to stop further degradation of the environment. Solid sorbents generally exhibit better efficiency and stability than liquid sorbents for 'Post-combustion CO<sub>2</sub> capture'.<sup>1-7</sup> 'Pre-combustion CO<sub>2</sub> capture' is another best way to tackle climate change.<sup>8,9</sup> Lithium orthosilicate is one of the best-reported sorbents for high-temperature CO<sub>2</sub> capture. Very recently Sunkara et al. showed improved kinetics of CO<sub>2</sub> capture by using nanowires of lithium silicates and lithium tungstate.<sup>8,9</sup> However, these nanowires were not stable against agglomeration/sintering during high-temperature CO<sub>2</sub> capture, and they lost a significant amount of CO<sub>2</sub> capture performance in the 2nd cycle and around 40% in 4th cycle of CO<sub>2</sub> sorption-desorption. Thus, there is need for a sorbent which has following property, i) high CO<sub>2</sub> capture at elevated temperature (~650°C), ii) faster rate of adsorption/desorption, iii) stable (regeneration-reuse) for a large number of cycles.

In this work, we have designed and synthesized Highly Stable Lithium Silicate Nanomaterial (LSN), using Dendritic Fibrous Nanosilica (DFNS), DFNS is our patented material with a high surface area, and excellent physical and textural properties entails unique fibrous morphologies.<sup>1,10</sup> After our discovery and developmental work on DFNS, now more than 100 reputed groups worldwide started using DFNS for various applications, such as catalysis, photocatalysis, CO<sub>2</sub> capture-conversion, sensing, detection and extraction of ions, supercapacitors, drug delivery, and other biomedical applications.<sup>1,10</sup>

LSN showed exceptional high CO<sub>2</sub> capture capacity (0.33 g g<sup>-1</sup>, close to theoretical value) and ultra-fast kinetics (0.22 g g<sup>-1</sup> min<sup>-1</sup>). Notably, it showed unprecedented stability up to 200 cycles, while the recently reported and best-known sorbent lithium silicate nanowires<sup>7</sup> start losing its capture capacity in 2nd cycle itself. Our synthesized materials seem to be the best-known in terms of total capture capacity, kinetics, and stability, reported till date.



**PP-06**

**Green Catalyst One-pot Synthesis of Benzimidazole and Derivatives**

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**Abstract:**

A series of substituted benzimidazole were prepared through the one-pot reaction of phenylenediamine with various Aromatic aldehydes in the presence of ferrous sulphate as catalyst both in Ethanol and water as solvent under Sonication and Grinding. The reactions proceed smoothly in excellent yield, high chemo selectivity and with an easy work-up with better yield.

**Keywords:** Benzimidazole, Ferroussulphate Aldehyde, Green Route

**PP-07**

**Synthesis and Characterization of Novel Salen type Schiff Bases**

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**Abstract:**

2-hydroxybenzohydrazide was prepared from methyl salicylate and hydrazine hydrate and the two Schiff base ligands have been prepared by the 1:1 molar condensation of 2-hydroxybenzohydrazide with 5-Mthoxysalicylaldehyde and 5-Hydroxysalicylaldehyde. All the compounds have been characterized by IR, <sup>1</sup>HNMR, <sup>13</sup>CNMR, MS and Elemental analysis.

**Keywords:** Salens, Schiff bases, Ligands.

**PP-08**

**Synthesis and Characterization of Sodium alkoxide as a Organic Reagent**

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**Abstract:**

Simple and improved methods have been found to carry out the preparation of Sodium alkoxide from respective alcohol.sodiumalkoxides, viz. sodium methoxide, sodium ethoxide, sodium butoxide were prepared by reacting sodium metal with respective alcohol. The experiment was carried out at chilled condition because reaction is exothermic. Sodium alkoxide is commonly used as strong base. These compounds were characterized using IR spectroscopy.

**Keywords:** Sodium methoxide, sodium ethoxide, sodium butoxide, IR Spectra.

**PP-09**

**Development Of Surface Functionalized Nano Carriers For Dual Drug Delivery**

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**Abstract:**

Combination chemotherapy is a significant strategy used against drug-resistant tumors. Further, it significantly reduces side effects of the drugs due to its enhanced efficacy with minimal dose. Herein, we have developed amine functionalized silica nanoparticles (ASNP) having capability to carry dual anticancer drugs, curcumin (CUR) and doxorubicin (DOX) as well as their stimuli responsive release at the site of interest.

In order to achieve this, CUR was first introduced into the silica matrix of ASNP during their synthesis. The free amine groups present on the surface of CUR encapsulated ASNP (CUR-ASNP) were then used for covalent conjugation of DOX using glutaraldehyde as a cross-linker. The developed dual drug, DOX and CUR loaded ASNP (DOX-CUR-ASNP) were thoroughly characterized and its therapeutic efficacy was compared with individual drug loaded systems (CUR-ASNP and DOX-ASNP). XRD analysis suggests the amorphous nature of ASNP and drug loaded systems. TEM micrograph confirmed the formation of well-spherical SiO<sub>2</sub> nanoparticles of average size about 48.5 nm. It has been observed that the developed nanocarriers exhibit pH dependent charge reversal features and are highly stable in aqueous medium. The successful encapsulation of CUR and conjugation of DOX on ASNP was evident from FTIR, UV-visible and fluorescence spectroscopic techniques. The CUR content in CUR-ASNP was found to be 160 mg/g of CUR-ASNP, whereas loading efficiencies of DOX were found 27 and 28 % for DOX-ASNP and DOX-CUR-ASNP, respectively. It has been observed that the dual drug loaded system is capable of delivering both DOX and CUR at mild acidic environment of tumor (pH 5.5) and have higher toxicity towards cancer cell (MCF-7) as compared to their individual counter parts.

**PP-10**

**Bio control potential of *Bacillus thuringiensis* isolated from soil samples against mosquito larvae**

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**Abstract:**

A major challenge for achieving successful mosquito control is overcoming insecticide resistance. The potential of *Bacillus thuringiensis* isolated from different soil sample as a control strategy of mosquito and monitoring of larvae susceptibility was investigated in this research. Larvicidal activity of *Bacillus thuringiensis* on mosquito larvae was assessed by isolating them from different soil habitat at Dapoli. The isolated organisms were confirmed as *BT* based on biochemical characterization and microscopic observation. Two isolates of *BT* obtained from soil sample labeled as BT1, BT2 were used for study. The larvicidal activity was measured by mortality rate and change in morphology of the activity was observed at interval of 4, 8, 12 and 24 hours on mosquito larvae. This two isolates of *BT* showed a slight level of variation in their larvicidal activity. From above two isolates were showed 100% mortality on mosquito larvae after 12hours.

From this study, it is concluded that *Bacillus thuringiensis* very potent biolarvicide that brings about mortality of mosquito larvae at a short duration of time.

**Keywords:** Malaria, Mortality, Larvicidal activity, *Bacillus thuringiensis*, insecticidal activity.

**PP-11**

**Bioethanol production from sweet corn, sugarcane, beat root, sweet potato substrates**

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**Abstract:**

Industrial ethanol production has been performed using various starchy materials such as sweet corn, sugarcane, beat root, sweet potato. Different fermentation conditions were examined. The influence of raw material pre-treatment like sterilization and fermentation as well as the type of *Saccharomyces cerevisiae* yeast preparation on the yields of the process were studied. All substrate has maximum yield. The results suggest that bioethanol production from sweet potato and beat root juice has promise as an alternative substrate.

**Keyword:** Bioethanol, sterilization, fermentation, *Saccharomyces cerevisiae* etc.

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PP-12

**Solvothermal synthesis of NiS nanoparticles using molecular precursor  
for high performance supercapacitor application**

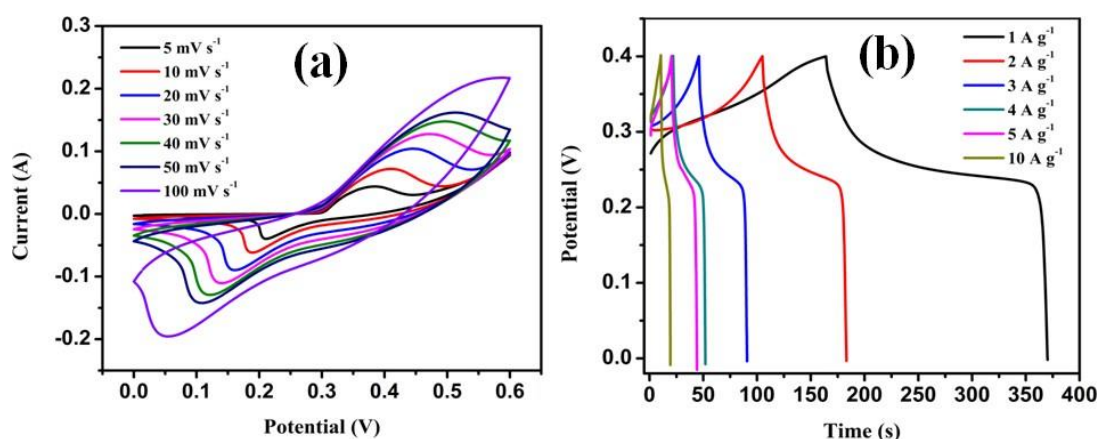
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**Abstract:**

Supercapacitors (SCs) have attracted a great attention nowadays, due to their characteristic properties such as long cycle stability, high power density, fast charge/discharge rates etc. NiS nanoparticles are important family members of the transition metal sulfide, which are the promising electrodes in the field of solar cells, supercapacitors and as catalysts [1, 2]. Herein, we report the synthesis of NiS nanoparticles using solvothermal method using  $\text{NiCl}_2(2\text{-Methyl benzaldehydethiosemicarbazone})_2$  as molecular precursor. The as-synthesized materials were characterized by powder X-ray diffraction, transmission electron microscopy, Fourier transform infrared spectroscopy, UV-Visible spectroscopy and photoluminescence spectroscopy. The as-prepared NiS nanoparticles were used as an electrode material for supercapacitor application. The electrochemical performances are evaluated by cyclic voltammetry (CV) and galvanostatic charge-discharge (GCD) and electrochemical impedance spectroscopy (EIS) methods. Fig. 1a shows CV curves of the NiS electrode measured in a three-electrode cell with the scan rates in the range of 5-100  $\text{mV s}^{-1}$ . The GCD curves of the NiS electrode at current densities in the range of 1-20  $\text{A g}^{-1}$  are shown in Fig. 1b. The specific capacitance calculated was found to 515  $\text{F g}^{-1}$  at 1  $\text{A g}^{-1}$ .



**Fig.1** (a) CV curves at different scan rates and (b) GCD curves at different current densities of NiS nanoparticles.

**References:**

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**PP-13**

**Synthesis and characterisation of ZnO-CuO-Fe<sub>2</sub>O<sub>3</sub> mixed metal oxide nanocomposites and its photocatlytic efficiency for crystal violet degradation**

**Sajid M. Mansoori\*, Ramesh S. Yamgar, Shreemant V. Rathod**

**Abstract:**

The nanocomposites are comprised of a large variety of systems, such as 1-D, 2-D, 3-D and amorphous materials which are made up of distinctly dissimilar components and mixed at the nanometre scale. Nanocomposites are high performance materials which exhibits rare and unique properties which are due to quantum confinement, surface plasmon reaction, tunnelling of electrons and density of states. Chemical co-precipitation method was applied to synthesis (ZnO:CuO:Fe<sub>2</sub>O<sub>3</sub>) nanocomposites in different ratio. XRD, FTIR, SEM and TEM was used to characterized the prepared nanocomposites. Debye Scherrer formula was used to calculate the crystallite particle size. The SEM and TEM was used to confirmed the crystallite particle size. The electron diffraction studies indicate that the nanocomposite are polycrystalline in nature. The photocatalytic efficiency of ZnO:CuO:Fe<sub>2</sub>O<sub>3</sub> nanocomposites was evaluated using crystal violet as model organic compound in the presence of visible light. The enhanced photodegradation efficiency was recorded for the sample ZnO:CuO:Fe<sub>2</sub>O<sub>3</sub> in the ratio of 3:1:4. Our results here indicate that the variation in concentration of CuO and ZnO innanocomposite catalyst has great potential for organic pollutant removal from waste waters.

**Keywords: Nanocomposites, degradation, crystal violet**



**PP-14**

***Lactobacillus* derived biosurfactants: A green alternative to chemical surfactants for biomedical applications**

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**Abstract:**

Chemical surfactants being environmentally toxic and posing problem like recalcitrant and persistent nature, surfactants extracted from microorganisms are being tapped as novel green alternatives to deal with these problems. Biosurfactants effectively inhibit bacterial adhesion and retard biofilm formation and therefore have been reported as a promising strategy for development of potentially useful new generation of anti-adhesive and antimicrobial coatings for medical devices. In the present study, cabbage and apples were used for isolation of bacterial strains capable of producing the biosurfactant. On the basis of morphological and biochemical characterization, the isolates were found to belong to *Lactobacillus* spp., which was confirmed by 16S rRNA sequencing. They were screened for biosurfactant production on the basis of Drop collapse test, Oil Spreading assay, Emulsification Assay, CTAB Assay, Blood Hemolysis Test and Surface Tension Reduction test. The biosurfactant produced by isolated strains was extracted using Acetone Precipitation Method and was further characterized by FTIR spectroscopy. The antimicrobial activity of the biosurfactants was checked against two urinary tract pathogens viz. *E. coli* and *Candida albicans* using Agar Well Diffusion Method while their anti-adhesive activity was checked using Tube method, Blot Succession Technique and confirmed by Scanning Electron Microscopy.

**Keywords:** Biosurfactant, *Lactobacillus*, antimicrobial, anti-adhesive, urinary pathogens.

**PP-15**

**Comparative study of effect of polyphenols from green tea and *psidium guajava* leaf on quorum sensing and biofilm formation by food spoilage microorganisms.**

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**Abstract:**

In current scenario, various chemical preservatives which are used to increase the shelf life of food have been banned due to increased resistance, potential toxicity and adverse health effect. Finding novel greener alternatives is therefore the need of the hour. Hence, the present study was aimed at extracting polyphenols from Green tea and *Psidium guajava* leaf and determining their potential as a biopreservative to increase the shelf life of food.

Quorum sensing (QS) is a gene regulatory and intercellular signaling mechanism implicated in bacterial pathogenicity and food spoilage. Therefore blocking microbial QS system may help prevent QS controlled food spoilage causing phenotypes. The present study is a comparative analysis of quorum sensing (QS) inhibitory and anti-biofilm potential of Green tea and *Psidium guajava* leaf extract. Green tea and *Psidium guajava* leaf extract containing 320 mg GAE/g and 240 mg GAE/g of total polyphenols respectively were found to inhibit QS-controlled violacein production in *Chromobacterium violaceum* MCC 2290. Green tea extract showed maximum inhibition of protease and lipase activity of *Bacillus subtilis* than *Psidium guajava* leaf extract. The anti-biofilm effect of both the extracts was investigated using Crystal Violet Tube Assay method and confirmed by Light Microscopy and Epifluorescence microscopy. Green tea extract exhibited higher activity inhibiting biofilms of *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis* and mixed cultures respectively than *Psidium guajava* leaf extract. Stability studies of the polyphenolic extracts of Green tea indicated stability within pH range 3-6 at 4°C than at 25±1°C suggesting a role of Green tea polyphenols as a novel QS inhibitor and/or anti-biofilm agent that can be act as a green alternative to chemical preservatives to enhance the shelf life and increase food safety.

**Keywords:** Green tea, *Psidium guajava*, quorum sensing inhibitory, anti-biofilm, food shelf life

**PP-16**

**Synthesis and characterization of ZnO-CuO nanocomposite for H<sub>2</sub> gas sensing application**

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**Abstract:**

ZnO-CuO nanocomposite powder was prepared using chemical coprecipitation method. The powder was characterized by Thermogravimetry (TG), Differential Thermal Analysis (DTA), X-ray diffraction (XRD), Scanning electron microscopy (SEM), Energy-dispersive X-ray spectroscopy (EDX) and Fourier transform infrared spectroscopy (FTIR) techniques. As synthesized ZnO-CuO nanocomposite powder was examined for sensing the H<sub>2</sub> gas.

**PP-17**

**Green Route Synthesis Of Nickel Substituted Lanthanum  
Cupratesnanomaterials And Their Photocatalyticapplication In Dye  
Degradation**

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**Abstract:**

The Lanthanum Spinel system:  $\text{La}_2\text{Cu}_{(1-X)}\text{Ni}_X\text{O}_4$ ; where  $X = 0.00, 0.25, 0.50, 0.75$  and  $1.00$  crystallites were prepared via; co-precipitation process using lanthanum nitrate, nickel nitrate and cupric nitrate as raw materials using sodium hydroxide to control the pH value and peroxide to achieve proper oxidation. The obtained precursor is heated at  $800^\circ\text{C}$  in silicon carbide furnace, the calcination temperature ascertained by TG-DTA analysis. The as-prepared  $\text{La}_2\text{Cu}_{(1-X)}\text{Ni}_X\text{O}_4$  crystallites were characterized by XRD, SEM, EDAX, IR and UV-Vis spectra. The present nanomaterials were used for photocatalytic degradation of important dye. Various parameters affecting the photocatalytic dye degradation such as time, catalyst quantity and the extent of doping were studied. This study provides clean and benign photocatalytic route for the degradation of environmentally hazardous dye.

PP-18

S-Acylation Of Benzo[D]Oxazole-2-Thiol/ Oxazolo[4,5-B]Pyridine-2-Thiol And Its Computational Study

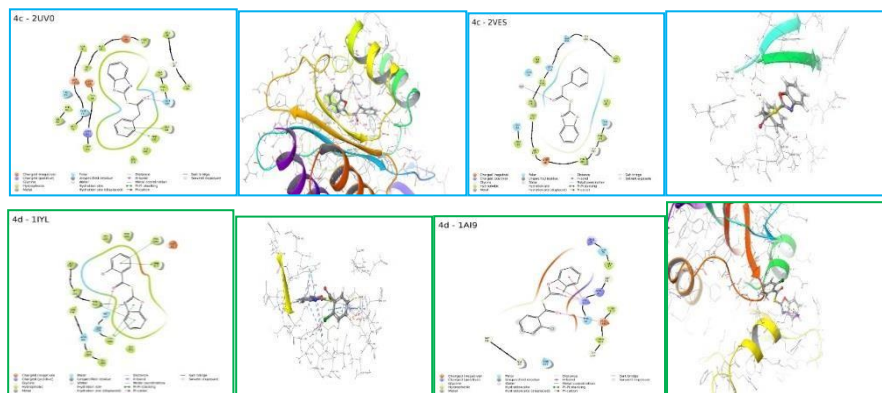
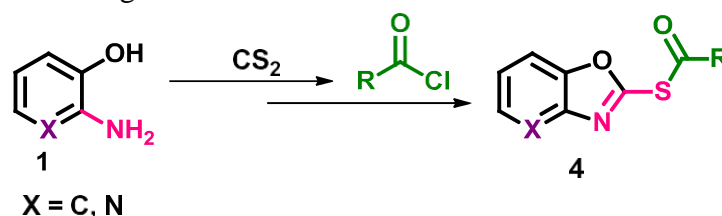
Sidique Moh.dAhmad<sup>a</sup>, Shaikh Aisha<sup>a</sup>, Mustapha Mandewale<sup>a</sup>, Suraj Narayan Mali<sup>b</sup>,  
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**Abstract:**

S-acylation of mercaptobenzoxazole/oxazolo[4,5-*b*]pyridine-2-thiol were accomplished *via* starting from cyclization of 2-aminophenol/2-aminopyridin-3-ol with carbon disulphide in basic condition followed by reactions with acid chloride at ambient temperature. A computational study was performed by the density functional theory (DFT) method. Absorption, Distribution, Metabolism, Excretion and Toxicity (ADMET) properties were calculated from popular admetSAR server (1) also obtained mixed combinations for in-silico Ames test toxicity profile. We observed that all the synthesized compounds are non-carcinogenic, non-substrate and found inhibitors. We also investigated the theoretical binding modes and comparative docking protocol of synthesized compound at the corresponding binding sites using molecular docking modelling and understand the ligand-receptor possible intermolecular interactions for selected proteins from selected strains of bacteria and fungi.



**Keywords:** S-acylation, benzo[d]oxazole-2-thiol, oxazolo[4,5-b]pyridine-2thiol, computational study.

**PP-19**

**Analysis of Fexofenadine hydrochloride content in Pharmaceutical Drug  
by UV-Spectrophotometry Technique**

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**Abstract :**

The objective of the research work is to develop suitable analytical method for determination of rapid, simple, accurate, least time consuming Spectrophotometric method for quantitative determination of quality check at  $\mu\text{g/ml}$  level. Pharmaceutical level which contain Fexofenadine hydrochloride. Buffer used included potassium hydrogen Phthate and Acetonitrile. Fexofenadine hydrochloride was crushed and samples ranging between 2-30  $\mu\text{g/ml}$  were being prepared for determination. Further UV analysis were carried out at 220nm. The method was found to be specific and stability indicating, can be use in Quality-control laboratories for Quantitative analysis of the drug by UV Spectrophotometer.

**Key words:-** Fexofenadine hydrochloride, buffer, Acetonitrile, UV spectrophotometer.

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Short Syntheses of Natural Antimalarial Peroxide

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**Introduction:** Malaria still remains a leading global problem, despite substantial efforts to control the disease over several decades. The name **-mal aria** means **-bad air**. C. Laveran in 1880 was the first to identify the parasites in the human blood. It was later identified by R. Ross that malaria is transmitted by mosquitoes. Several peroxides have shown antimalarial activity, the most active of them is the endoperoxidesesquiterpeneartemisinin<sup>[1,2]</sup>. The aromatic fruits of several plants in the genus *Ammonum* [*Zingiberaceae*] are used worldwide as the spice cardamon. The compound endoperoxide**3** was extracted from the fruit of *Ammonumkrevanh* Pierre, which was observed to have high potency inhibition of *P.falciparum*<sup>[3]</sup>. Thus, we planned to synthesize the same compound by chemical means.

**Present work:** In the present project we have reported syntheses of anti-malarial endoperoxide by condensation of two monoterpene derivatives. From structure anti-malarial activity studies of artemisinin, it was observed that the activity of artemisinin is due to the peroxide bridge. Thus, it was decided to synthesize the molecule, which contains the peroxide bridge.

**Results and Discussion:** Syntheses of anti-malarial novel terpene peroxide natural molecule (**3**) was achieved from easily available terpenes  $\alpha$ -pinene (**1**) and  $\beta$ -pinene (**2**). Compound (**1**) and (**2**) were oxidized using  $\text{SeO}_2$ , to get oxidized molecules myrtenal and pynocarvone (70-77% yield) respectively. Further myrtenal was protected with propane-1,3-dithiol to yield dithiane (87% yield), which condensed with pinocarvone and further subjected to addition of oxygen to get the hydroperoxide. The latter molecule was subjected to deprotection and *in situ* cyclization to get endoperoxide**3**. All the synthesized molecules were analysed by FT-IR,  $^1\text{H-NMR}$  (500 MHz) and  $^{13}\text{C-NMR}$  (125 MHz).



References

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**Curcumin- Extraction, Physical and Chemical Analysis- Basic Methods  
for Further Research**

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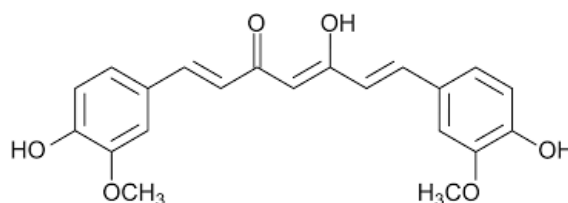
**Abstract:**

Since ancient times people have studied nature and plants inherently concerning their healing effect on the human body. Plants have been considered indisputable curative means -natural remedies for humans and animals. Researchers have sought after their bio-properties, bioavailability, possible interactions, adverse effects, their pharmacological uses or their efficacy and safe use both in animals or human subjects. Turmeric is one of the many plants with a multitude of beneficial health -properties which nature makes available for people. Besides its use as a condiment or pigment, turmeric, a source of curcumin, has been used with medicinal purpose in India (*Curcuma longa*) for centuries. Proof that curcumin has anti-inflammatory and anticarcinogenic activity has renewed the scientific interest concerning disease prevention and treatment. Curcumin is the main natural polyphenol found in the rhizome

of *Curcuma longa* (turmeric), having antioxidant, anti-inflammatory, antimutagenic, antimicrobial, antiparasitic and anticancerous properties. The most active component of

turmeric is curcumin, which makes up 2 to 5% of the spice. The characteristic yellow color of turmeric is due to the curcuminoids, first isolated by Vogel in 1842. Extensive investigation over the last five decades has indicated that curcumin reduces blood cholesterol. (Aggarwal et al., 2006).

The main objective of our research was to obtain curcumin-based pharmaceuticals and food products. Concerning the pharmaceutical manufacturing, we extracted curcumin from *Curcuma longa*, made the physical and chemical analysis of the extracted formula and finally realized the quality control of the pharmaceutical form.





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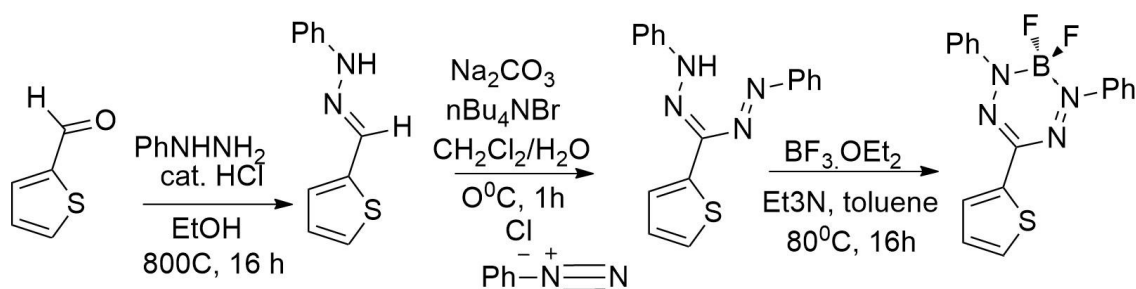
**Poly (Formazan)S: A New Class of Tunable Polymeric Dyes**  
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**Abstract:**

Polymeric dyes are defined as macromolecules that exhibit chemical linkages to their chromogenic units. The main advantages of such macromolecular dyes compared to their low-molecular-weight counterparts are the homogeneity of the resulting colored material and the high migration fastness. With the advent of organic electronics, polymeric dyes have experienced a renaissance since low migration, enhanced process ability, especially good film-forming properties, and the possibility of combinations with conjugated polymers offer new opportunities for active materials within devices. One chromophore that has frequently been covalently combined with polymers is perylene. Perylene derivatives have been incorporated as pendant side chains in poly-(methyl methacrylate), poly(isocyanide), poly(fluorene), and poly(fluorene-alt-phenylene). Several polymeric perylenes have been employed in organic light-emitting diodes (OLEDs) and organic photovoltaics (OPVs). In contrast, **tetrazolium** salts and **formazan** dyes have only very rarely been transformed into polymeric dyes. These dyes have been well established for the purpose of biological labeling because of their remarkable properties, including high absorption coefficients, narrow emission bands, high quantum yields of the singlet emitter, negligible formation of the triplet state, and high photo stability. In recent years, **FORMAZAN** dyes have also been employed for organic electronics, for instance in **OLED** applications. In this contribution, the possibility of generating polymeric **FORMAZAN** dyes is explored. Different homo Copolymers were synthesized by electrochemical polymerization, and the photo physical properties of these novel polymeric dyes were investigated in bulk and on the single molecule level.



**PP-23**

**Synthetic Method, Anticancer and Anticonvulsant Activity of Substituted Cyclic Imines and Their Inner Transition Complexes.**

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**Abstract:**

1,3,4-Thiadiazole is a enormous curiosity to a large number of researchers due to their grand medicinal and industrial significance and it is remarkable that the synthetic publication extreme outweigh in numbers those concerning to all other fields. Derivatives of substituted 1, 3, 4-thiadiazole moiety and its metal complexes considered as lead mixes for medicate union, and a few of them have exhibited higher antimicrobial movement in contrast with standard drugs. In this work a synthesis of Schiff base of substituted 1, 3, 4-thiadiazole-2-amine and its metal complexes were synthesized effectively The compounds will be screening for their anticancer and anticonvulsant activity. The result of this study may be indicated that substituted Schiff bases of 1, 3, 4-thiadiazole moiety and their metal complexes are hopeful source of anticancer and anticonvulsant activity. Hetero atom present in the compounds showing the enormous biological activity.

**Keywords:** Synthesis, Schiff base, Anticancer, Anticonvulsant activity.

**PP-24**

**Determination of Pantoprazole sodium by Spectrophotometric  
Technique**

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**Abstract:**

In the present research work development and validation of a simple, rapid, accurate, precise, sensitive and economical UV spectrophotometric method for the estimation of Pantoprazole sodium in bulk and pharmaceutical dosage form. The sodium salt of pantoprazole is obtained as an almost white to off white, crystalline powder. Pantoprazole sodium—a substituted benzimidazole derivative it is a gastric hydrogen-potassium adenosine triphosphatase (H<sup>+</sup>/K<sup>+</sup>ATPase) inhibitor. Pantoprazole was dissolve in Buffer : Acetonitrile (55:45) solution was determined at the wavelength at 290 nm. In this method the simple UV spectrum of pantoprazole in solution was obtained which exhibits absorption maxima at 290 nm and linearity range was found to be 5- 25 ppm. The proposed method was validated for its accuracy, precision, specificity. No interference was found from tablet excipients at the selected wavelength and assay conditions. The proposed methods were successfully applied to the assay of pantoprazole in pure and tablet dosage form.

**Keywords :-** Pantoprazole sodium, Buffer, Acetonitrile, UV spectrometer

**PP-25**

**Determination of Cetirizine Dihydrochloride in pharmaceutical drug by Spectrophotometric Technique**

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**Abstract :**

This research study is aimed to develop and validate a uv spectrometer based analytical method. For smooth, rapid, sensitive and accurate method for the estimation of cetirizine-dihydrochloride in pharmaceutical dosage. From buffer solution containing KHP and acetonitrile was used solution in range (5-25 ppm) were prepared by using named tablet. Determination by uv spectrometer at 230nm was observed the proposed procedures were successfully applied to the determination of cetirizine bulk and tablet form with precision was observed

The procedure is simple, rapid and the results are reliable to be used in laboratories work.

**Key Words :-** Cetirizine Di hydrochloride, UV Spectrophotometer, buffer, Acetonitrile

**PP-26**

**Synthesis of 1-(5-(3-aminophenyl)-3-phenyl-4,5-dihydro-1-H-pyrazole-1-yl)ethanone derivatives using isocyanates**

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**Abstract**

Pyrazoline as a better group for many treatments, have many pharmacological properties such as anti-inflammatory, antipyretic, antibacterial, antifungal, diuretic, etc. So many methods are made to synthesize pyrazolines. In this work pyrazoline derivatives were efficiently synthesized in excellent yields and in less reaction time using isocyanate and hydrazine hydrate. Different reagents were used to synthesize the derivatives of parent molecules by using ‘nucleophilic addition reaction’ way of synthesis.

**Keywords:** Hydrazine hydrate, Pyrazolines, Nucleophilic addition reaction

**PP-27**

**New benzimidazole derivatives as Potential Antimicrobial Agents**

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**Abstract:**

Various 2-substituted benzimidazoles have been synthesized from o-Phenylenediamine and organic acids. The reaction of salicylaldehyde with ethyl acetoacetate gives 3-acetyl coumarin which on bromination yielded 3-(2-bromoacetyl)-2H-chromen-2-one; then N-alkylation of 2-substituted benzimidazoles carried out with 3-(2-bromoacetyl)-2H-chromen-2-one to give some new coumarin induced benzimidazoles. The compounds were synthesized in good yield and the structures of compounds have been established on the basis of their spectral data. Synthesized compounds were screened for computational analysis and antibacterial activities.

**PP-28**

**Dietary Phytochemicals In (Madhuca Indica) And Its Use For Postnatal Care In Yavatmal District**

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**Abstract:**

This is a comprehensive review of the health phytochemicals commonly found in Madhuca Indica (Mahua) .these includes, carotenoids,Ascorbic acid ,Thiamine ,Riboflavine, Niacine ,Folic Acid Biotine, Inositole.The region has well developed naturally occurring practices for taking care of mother and child after the delivery. There are traditional methods with medicinal value and Herbal formulation meant for Oral and external application that are used for Postnatal care of mother and Child .Such health practices are on decline. Current study highlights the potential of traditional methods of postnatal care and the need for their documentation .These practices if incorporated with modern health care system could improve the health status of thousands of ladies and there newborns.

**Keywords:** Postnatal Care, Yavatmal , Herbal formulation .

**PP-29**

**Post-Harvest Fungal Disease Of Some Fruits In Mumbai.**

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**Abstract:**

The survey of post-harvest fungal disease of some fruits in the market of Mumbai was undertaken. Fruits suffer every year due to the microorganisms like bacteria, viruses, yeast and fungi. Fungal diseases of 9 selectable fruits were studied and there fungal pathogens were observed. The fungal pathogens observed are Alternaria spp, Aspergillus spp, Mucor spp, Fusarium species, Penicillium species, Rhizopus species found on post-harvest fungal disease of some fruits. The present investigation is related with that fungal infection is mainly due to injury during marketing, storage and handling.

**Keywords-** Post harvest, diseases, fungus, fruits, vegetables.



PP-30

**Analysis of Heavy Metals Content in Spices Collected from Local Market of Mumbai by using Atomic Absorption Spectrometer.**

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**ABSTRACT**

This study has been conducted to determine the concentration of heavy metals (Lead (Pb), Cadmium (Cd), Mercury (Hg), Arsenic (As) ) in ten (10) commonly used spices available in the local markets of Mumbai. Spice samples were collected from the local grocery shop of Mumbai. The samples were processed, digested and finally analyzed using Atomic Absorption Spectroscopy (AAS). The results revealed the concentration of Cadmium (Cd) in the ranges of 0.194 – 3.17 ppm which is more than the maximum permissible limit in most of the spices. The concentration of Lead (Pb) was detected which ranged from 1.52 – 2.92 ppm. Arsenic (As) was found in the Fennel seeds sample only i.e. 0.92 ppm. Concentration of Mercury (Hg) ranges from 0.1 – 0.3 ppm. Pb, As and Hg levels in all the spices is within the safe limits as found on their comparison with the safety standards of World Health Organization (WHO).

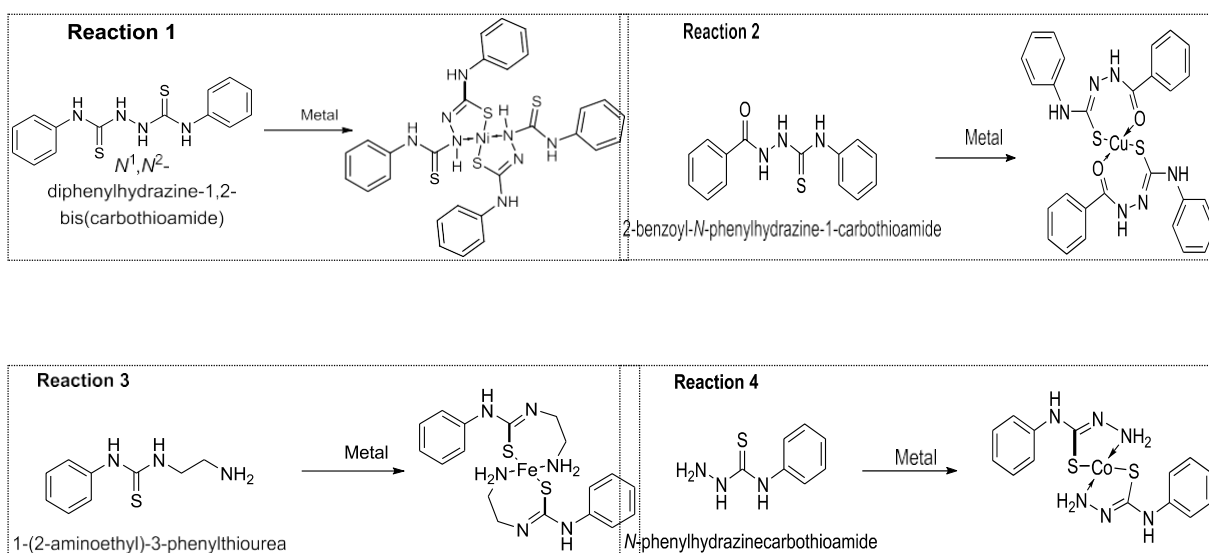
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## Synthesis and Characterization of Novel Metal-Thiourea Derivative Complexes and Their Anticancer Activities.

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**Abstract-** A new series of metal complexes of thiourea derivatives have been developed at mild condition. The method has been developed with the help of green approach. The complexes are thermodynamically stabilized by chelate ring. The ligands we have selected are bi-dented and tri-dented ligands. The resultant complexes can dissolve in many solvents like ethanol, THF, DMF, DMSO, acetone etc. All complexes have own importance due to their unique identity. Every complex is with N-H bonding which is responsible for pharmaceutical activities as well as solubility of complexes. The easily available metals Fe, Cu, Co, Ni are used for synthesis of complexes. The all thioureas are pharmaceutically active but the activity of Metal-thiourea derivative complexes is enhanced than parent thiourea derivatives.



**Keywords:-** Green Chemistry, Thiourea, Metal Complexes, Antibacterial Activity, Anticancer Activity.