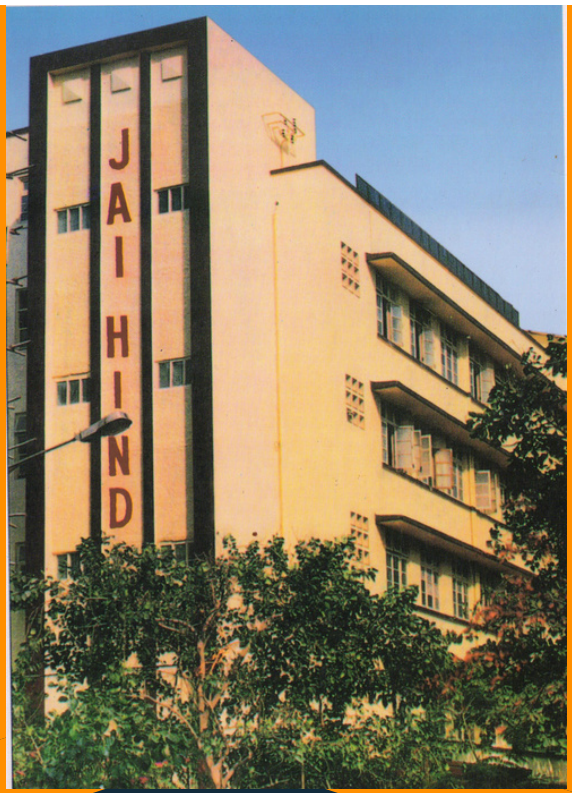
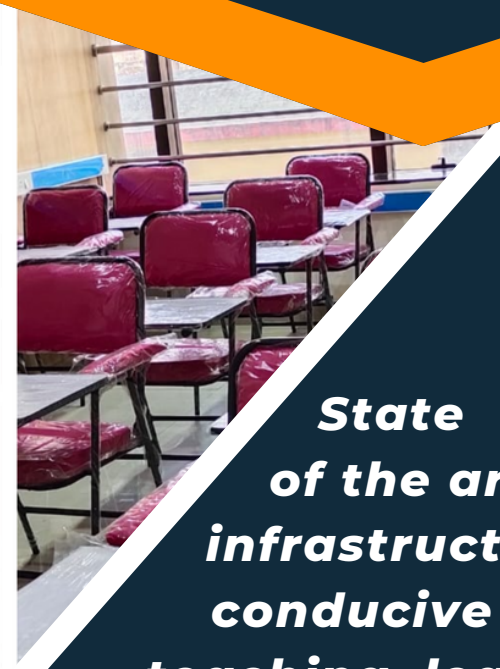
Jai Hind College Autonomous
Department of Chemistry

MSC CHEMISTRY

PHYSICAL, INORGANIC, ORGANIC





State of the art infrastructure conducive for teaching, learning & research

Dept. of Chemistry

The department of Chemistry offers an aided/unaided PG program in Physical, Inorganic & Organic Chemistry. The syllabus framework post-autonomy has been defined to offer multiple learning opportunities to students with active classroom teaching, practical coursework, internships, MOOCs, literature review, and research projects.

The department comprises of 12 highly qualified and experienced teaching staff members who are actively involved in PG teaching & research.

The college has an advanced Central Instrumentation Facility (CIF) with high-end analytical instruments such as HPLC (Agilent Infinity 1220), FTIR (Bruker Alpha II), DSC (Shimadzu 60 plus), Spectrofluorimeter (Shimadzu RF 6000), Uv-vis spectrophotometer (Shimadzu), Rotavap etc.

About the program

- The autonomous M.Sc. program is aligned with NEP and has two exit options- after first year with PGD (Post-graduate Diploma) & after two years with the Master's degree.
- CBCS (Choice Based Credit System) with 22 credits to be earned by a student per semester.
- Credits for internship & research projects incorporated within the curricular framework.
- Research Methodology and MOOCs to offer multiple learning avenues for students.
- Curriculum aligned with industry demands and current research areas.
- Syllabi across the semesters inspired from premiere academic institutes like IITs, IISERs & oriented towards competitive examinations like- NET, GATE, SET, PET etc.

Intake 2023-24

Branch of Specialization	Number of students
Physical Chemistry (Aided)	5
Inorganic Chemistry (Aided)	5
Organic Chemistry (Unaided)	10

Visit the college website for fee structure

Salient Features

Highlight 01

Lectures for Competitive Examination:

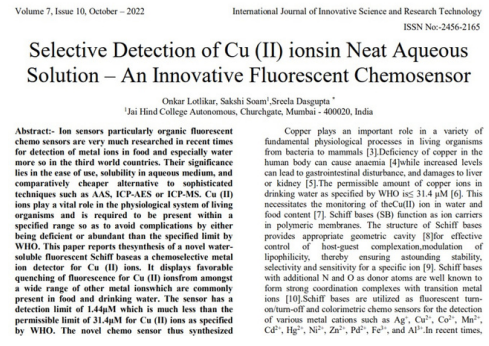
- 2018-20: University of Mumbai PET (03)
- 2019-21: University of Mumbai PET (06); GATE (02)
- 2020-22: University of Mumbai PET (04); GATE (01)

Ph.D. enrolments/Project Positions:

- University of Geneva
- Institute of Chemical Technology
- DAE-CEBS, UoM
- CSMCRI-CSIR Bhavnagar
- IIT Hyderabad (Young Researcher Program)
- BARC

Highlight 02

Student research papers



Volume 7, Issue 10, October – 2022 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165

Selective Detection of Cu (II) ionsin Neat Aqueous Solution – An Innovative Fluorescent Chemosensor

Onkar Lotlikar, Sakshi Soum[1],Sreela Dasgupta *
[1]Jai Hind College Autonomous, Churchgate, Mumbai - 400020, India

Abstract:- Ion sensors particularly organic fluorescent chemo sensors are very much researched in recent times for detection of metal ions in food and especially water more so in the third world countries. Their significance lies in the ease of use, solubility in aqueous medium, and comparatively cheaper alternative to sophisticated techniques such as AAS, ICP-AES or ICP-MS. Cu (II) ions play a vital role in the physiological system of living organisms and is required to be present within a specified range so as to avoid complications by either being deficient or abundant than the specified limit by WHO. This paper reports thesynthesis of a novel water-soluble fluorescent Schiff basesas a chemoselective metal ion detector for Cu (II) ions. It displays favorable quenching of fluorescence for Cu (II) ionsfrom amongst a wide range of other metal ionswhich are commonly present in food and drinking water. The sensor has a detection limit of 1.44μM which is much less than the permissible limit of 31.4μM for Cu (II) ions as specified by WHO. The novel chemo sensor thus synthesized

Copper plays an important role in a variety of fundamental physiological processes in living organisms from bacteria to mammals [3].Deficiency of copper in the human body can cause anaemia [4]while increased levels can lead to gastrointestinal disturbance, and damages to liver or kidney [5].The permissible amount of copper ions in drinking water as specified by WHO is≤ 31.4 μM [6]. This necessitates the monitoring of theCu(II) ion in water and food content [7]. Schiff bases (SB) function as ion carriers in polymeric membranes. The structure of Schiff bases provides appropriate geometric cavity [8]for effective control of host-guest complexation,modulation of lipophilicity, thereby ensuring astounding stability, selectivity and sensitivity for a specific ion [9]. Schiff bases with additional N and O as donor atoms are well known to form strong coordination complexes with transition metal ions [10].Schiff bases are utilized as fluorescent turn-on/turn-off and colorimetric chemo sensors for the detection of various metal cations such as Ag^{+}, Cu^{2+}, Co^{2+}, Mn^{2+}, Cd^{2+}, Hg^{2+}, Ni^{2+}, Zn^{2+}, Pd^{2+}, Fe^{3+}, and Al^{3+}.In recent times,

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 10 October 2022
DOI: 10.47191/ijcsrr/V5-i10-08, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

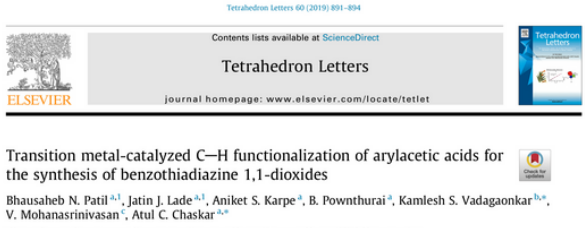
PFAS Degradation Techniques – A Road towards Alleviating Organic Pollution

Onkar Lotlikar[1], Dhwani Kapadia[2], Sreela Dasgupta[3]
[1,2,3]Jai Hind College Autonomous, 23-24 Backbay Reclamation, Churchgate, Mumbai - 400020, India

ABSTRACT: PFAS are commonly found pollutants in soil and water bodies. Of all the PFAS that are found, PFOA and PFOS are the most hazardous ones. The review focuses upon Adsorption, Sonochemical Degradation, Photocatalysts, and Bio-remediation as techniques for the removal and degradation of PFA.

KEYWORDS: Adsorption, Bio-remediation, Photocatalyst, Sonochemical Degradation.

INTRODUCTION
PFAS are human-made chemicals that are used on a large scale due to their long-lasting nature and a wide range of applications. Additionally, the presence of strong carbon-fluorine bonds makes PFASs highly stable, both chemically and thermally [1]. The presence of such a strong bond complicates its degradation. Due to their strong C–F bonds, perfluoro alkylated substances persist for a longer time in the environment and are difficult to remediate. Their resistance towards grease, oil, water, and heat enables its use in a variety of fields which include fire-fighting foams, water-resistant fabrics, furniture, carpeting, cleaning products, non-stick cook-wares, and paints [2,3]. PFAS accumulate in the environment leading to an increased risk of bioaccumulation, causing health hazards [1,3,4]. The presence of such a strong bond complicates its degradation [5,6].

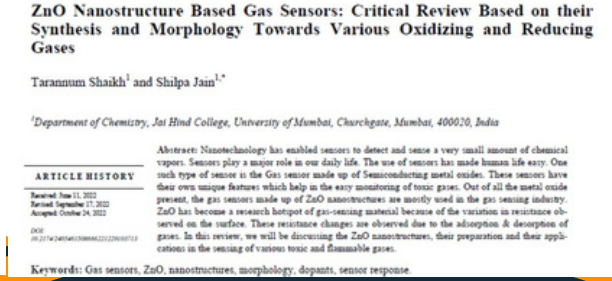


Tetrahedron Letters 60 (2019) 891–894
Contents lists available at ScienceDirect
Tetrahedron Letters
journal homepage: www.elsevier.com/locate/tetlet

Transition metal-catalyzed C—H functionalization of arylacetic acids for the synthesis of benzothiadiazine 1,1-dioxides

Bhausaheb N. Patil[a,1], Jatin J. Lade[a,1], Aniket S. Karpe[a], B. Pownthurai[a], Kamlesh S. Vadagaonkar[b,*], V. Mohanasrinivasan[c], Atul C. Chaskar[a,*]

[a] National Centre for Nanosciences and Nanotechnology, University of Mumbai, Vidyanagari, Mumbai 400098, Maharashtra, India
[b] Department of Dyestuff Technology, Institute of Chemical Technology, Mumbai 400019, Maharashtra, India
[c] Department of Biomedical Sciences, Vellore Institute of Technology, 632014, Tamil Nadu, India



ZnO Nanostructure Based Gas Sensors: Critical Review Based on their Synthesis and Morphology Towards Various Oxidizing and Reducing Gases

Tarannum Shaikh[1] and Shilpa Jain[1,*]

[1]Department of Chemistry, Jai Hind College, University of Mumbai, Churchgate, Mumbai, 400020, India

ARTICLE HISTORY

Abstract: Nanotechnology has enabled sensors to detect and sense a very small amount of chemical vapors. Sensors play a major role in our daily life. The use of sensors has made human life easy. One such type of sensor is the Gas sensor made up of Semiconducting metal oxides. These sensors have their own unique features which help in the easy monitoring of toxic gases. Out of all the metal oxide present, the gas sensors made up of ZnO nanostructures are mostly used in the gas sensing industry. ZnO has become a research hotspot of gas-sensing material because of the variation in resistance observed on the surface. These resistance changes are observed due to the adsorption & desorption of gases. In this review, we will be discussing the ZnO nanostructures, their preparation and their applications in the sensing of various toxic and flammable gases.

Keywords: Gas sensors, ZnO, nanostructures, morphology, dopants, sensor response.

Highlight 03

Student Internships

BASF We create chemistry

भा प अ कें BARC — राष्ट्र की सेवा में परमाणु — ATOMS IN THE SERVICE OF THE NATION

Nature kissed FROM NATURE WITH LOVE

NARSIPUR

Indian Institute of Technology Mandi

btra

TTCWMA

FDA MAHARASHTRA FOOD AND DRUG ADMINISTRATION

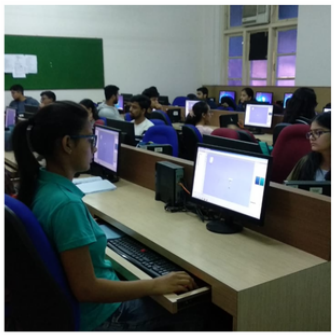
CSIR-INDIA सीएसआईआर CSIR भारत का नवाचार इंजन The Innovation Engine of India

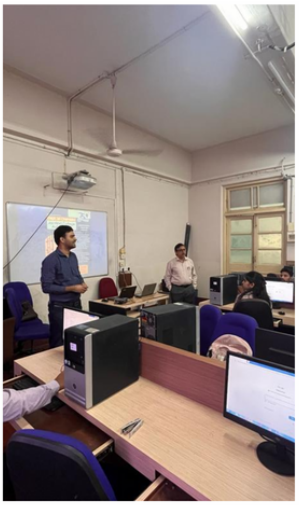
CIF

Highlight 04

Seminars/Workshops & Lab Visits:

- Computational Tools for Chemists: E-internship (June 07-12, 2021); Workshop (October 12-15, 2022)
- Training Workshop on HPLC: 18/09/2019
- Training Workshop on DSC: 11/02/2020
- Anchrom Enterprises Visit: 21/09/2019
- Institute of Chemical Technology Visit (GC-MS training): 29/09/2019





Student Feedback

Teachers backing up for each subject, Having 2 internships in within the course and having NPTEL too for additional credits and knowledge. Project was one of the interesting part since it stimulated a lot of interest and gave practical knowledge about Chemistry and where it is applied.

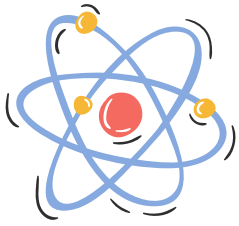
Ayesha Siddique (2021-23)

A lot of things such as the literature review and project work added value to the course but the one thing that was of most value to me was the computational softwares that were taught to us as a part of our internship. It has helped me a lot. The computational softwares that we were taught have also given all of us students an edge over the others.

Dhwani Kapadia (2018-20)

1. Sessions for competitive examinations 2. MOOCS and internship components 3. Well-structured syllabus covering both traditional and present-day information 4. Quality and diversity of the internal assessment methods 5. Prompt and fair feedback and assessment mechanisms.

Shreyas Dindorkar(2021-23)



Admissions 23-24

Eligibility & Admission Criteria:

A learner for being eligible to apply for admission to the M.Sc. degree course by papers in Chemistry must have passed: -

The B.Sc. degree examination of this University or degree of any other University recognized as equivalent thereto with Minimum 46 credits or its equivalent (i.e, the minimum credits required for majoring in a subject, and excluding the credits for optional courses) of the subject which he wants to offer (Chemistry) for the M.Sc. degree course by papers.

Admissions will be based on semester 5 & 6 grades.

Syllabus & Course Structure:

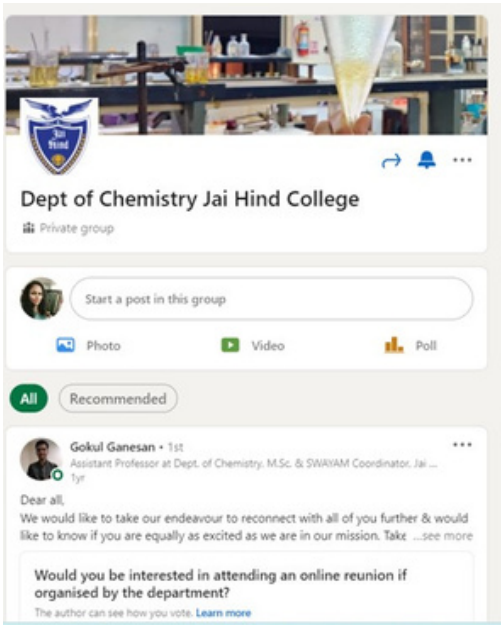
M.Sc. Part 1 Semester 1 syllabus effective till 2022-23

M.Sc. Part 1 Semester 2 syllabus effective till 2022-23

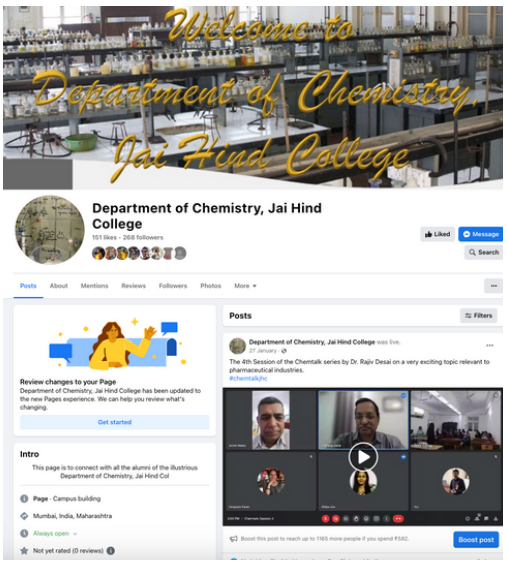
M.Sc. Part 2 Semester 3 (Physical; Inorganic; Organic)

M.Sc. Part 2 Semester 4 (Physical; Inorganic; Organic)

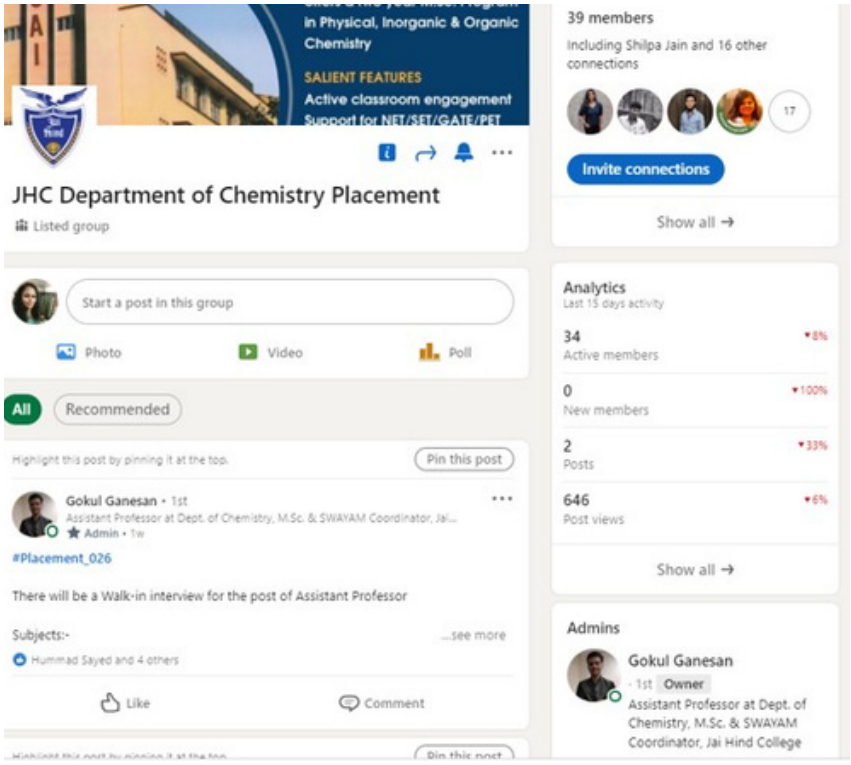
Digital Presence



Departmental LinkedIn Page



Department Facebook Page



Placement Support LinkedIn Page

For more details email us:

admissions.pg@jaihindcollege.edu.in