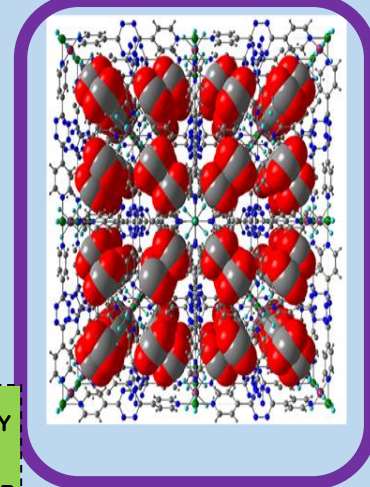
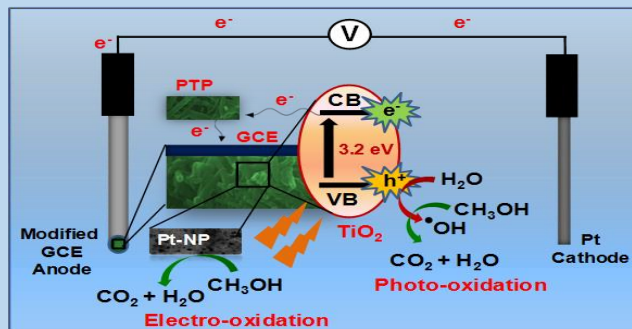


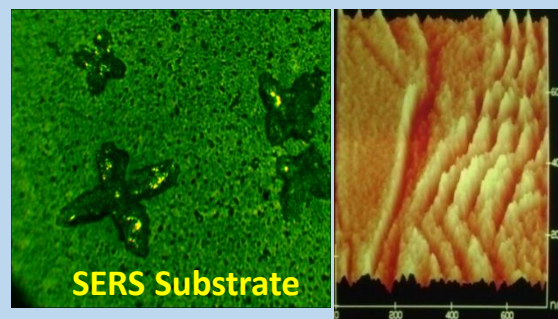
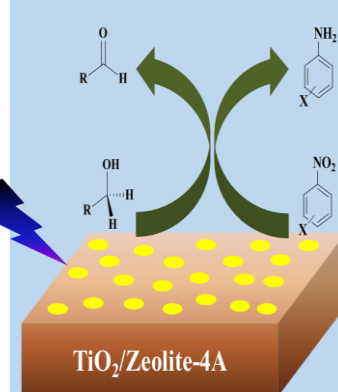
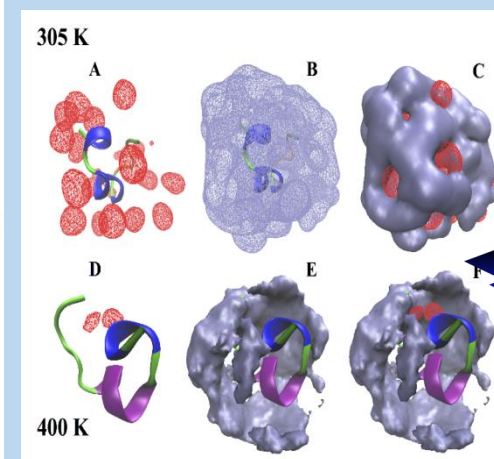
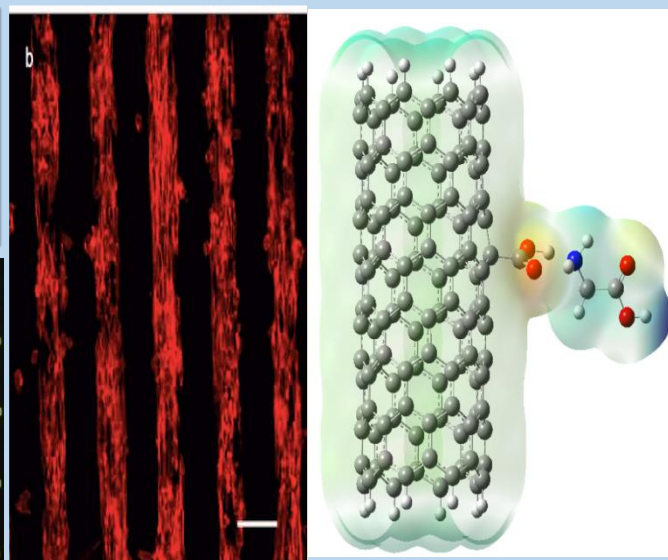
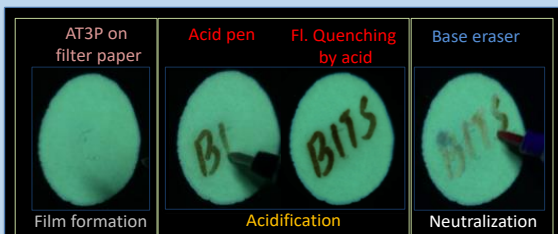
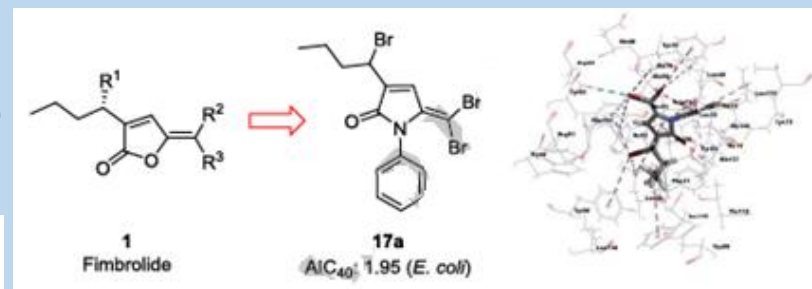
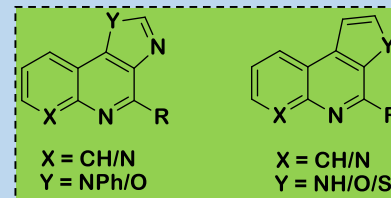


BITS Pilani
Hyderabad Campus



Department of Chemistry

PLACEMENT BROCHURE



Cover page picture: Departmental research outcomes

Department History and Focus

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achieve

lead

Focus

Established in 2008

Innovative and active teaching (Emphasis on hands-on experiments for M. Sc. Students)

Involvement in dynamic areas of research

Academic Programmes Offered

M.Sc. Chemistry

Ph.D in Chemistry (Organic, Inorganic, Analytical, Materials, Computational and Physical Chemistry)

Structured Courses (Core & Electives)



Electives are Interdisciplinary

Courses For M. Sc.

Core Discipline Courses

- (i) Physical Chemistry –(4 courses)
- (ii) Inorganic Chemistry- (3 courses)
- (iii) Organic Chemistry-(4 courses)
- (iv) Instrumental Methods of Analysis (IMA)
- (v) Chemical Experimentation Laboratory-I (Organic Lab)
- (vi) Chemical Experimentation Laboratory-II (Physical and Inorganic lab)
- (vii) Instrumental Methods of Analysis (with a lab component)

Elective Courses : offered (With lab)

- (i) Solid State Chemistry
- (ii) Electrochemistry
- (iii) Nanochemistry
- (iv) Green Chemistry and Catalysis
- (v) Photochemistry and Laser Spectroscopy
- (vi) Colloid and Surface Chemistry
- (vii) Analytical Chemistry
- (viii) Chemistry of Materials
- (ix) Numerical Methods in Chemistry
- (x) Bio and Chemical Sensors
- (xi) Polymer Chemistry
- (xii) Magnetic Resonance

Instrumental Exposure to the Students



M.Sc. Students (part of the course)

- (i) Powder X-ray diffractometer (XRD)**
- (ii) Gas Chromatography (GC)**
- (iii) X-ray Fluorescence Spectrometer**
- (iv) Microwave Synthesizer**
- (v) UV-Vis-NIR & IR Spectrometer**
- (vi) Digital Polarimeter**
- (vii) Circular Dichroism Spectrometer**
- (viii) Atomic Absorption Spectrometer**
- (ix) Thermal Analyzer (TGA and DSC)**
- (X) Solvent Purification System**
- (Xi) Fluorimeter**

Ph. D. Students

- (i) 400 MHz Nuclear Magnetic Resonance (NMR) Spectrometer**
- (ii) Field Emission Scanning Electron Microscope (FE-SEM)**
- (iii) Single Crystal XRD**
- (iv) Confocal Microscope**
- (v) Quadrupole Mass Spectrometer**
- (vi) Confocal Raman Microscope Spectrofluorimeter**
- (vii) X-ray Fluorescence Spectrometer**
- (viii) BET Surface Area Analyzer**
- (ix) Cyclic Voltammetry Instrument**

Department Facilities (Labs/ Work area)

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MEASUREMENT TECHNIQUE LABORATORY



Chemistry Research Laboratory



ORGANIC CHEMISTRY LAB



PHYSICAL AND INORGANIC CHEMISTRY LAB



Department Facilities (Labs/ Work area)

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ANALYTICAL CHEMISTRY LAB

INSTRUMENTATION ROOM

COMPUTATIONAL CHEMISTRY LAB

SPECTROSCOPY LAB

Department Facilities (Labs/ Work area)

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DST-FIST Equipment

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Microwave Synthesizer



UV-Vis-NIR



Raman Spectrometer



FT-IR



Thrust Areas of Research

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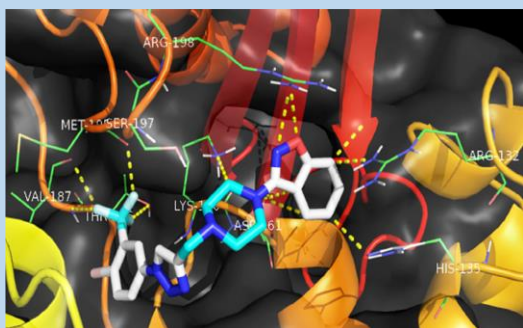
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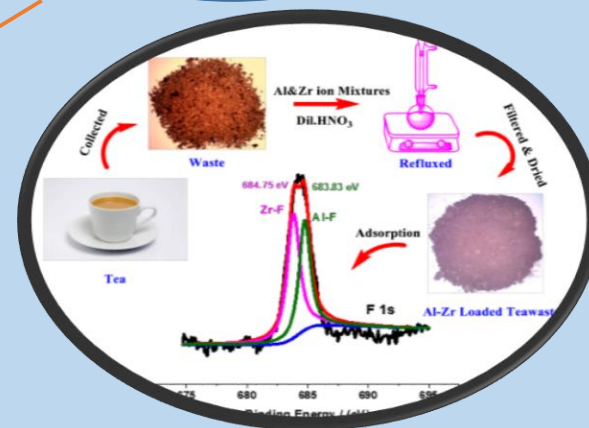
Computational
Chemistry

Organic Chemistry

Physical
Chemistry



Materials for Energy,
Health and
Environment



Inorganic Chemistry

Materials Chemistry

Analytical Chemistry

Student Extracurricular Activities

- Organizing guest lectures by eminent scientists (3-4 per semester)
- Events in annual technical festival ATMOS (CHEM Hunt, Anatomy of Murder, quiz, paper presentations, etc)
- Organizing visit to nearby research institutes/industry (once in a Year)

Publications

- One issue of Elixir Magazine every semester
- Highlights of recent breakthrough in science as bi-weekly news letter (CHEMazine)
- Information about available scholarship/internship and research opportunities

CHēmazine

AlcHemy
THE CHEMISTRY ASSOCIATION

Version 1.0.1.4

FROM THE EDITOR- Standing as each one of us is at the edge now, it's time to think from the unthinkable. We at Alchemy are delighted to bring out fourth newsletter of the semester which talks about the ideas which are very much the need of the hour.

Liquid crystal design method could speed development of cheap chemical sensors

Chemical engineers of University of Wisconsin-Madison have developed a new way to create inexpensive chemical sensors for detecting explosives, industrial pollutants or even the chemical markers of disease in a patient's breath. The sensor material consists of a thin film of metal salt, with liquid crystals anchored to the surface all pointing in the same direction. The researchers designed specific liquid crystal molecules and metal cations so that small amounts of analyte would disrupt the interactions of the liquid crystals with the surface, and throw the ordered arrangement into disarray. The change in the liquid crystal would be a visible indicator of the analyte's presence. Unlike expensive explosive-detecting puffer machines in airports that rely on complicated mass spectrometry or high-performance liquid chromatography equipment, these liquid crystal sensors could be portable, wearable and inexpensive.

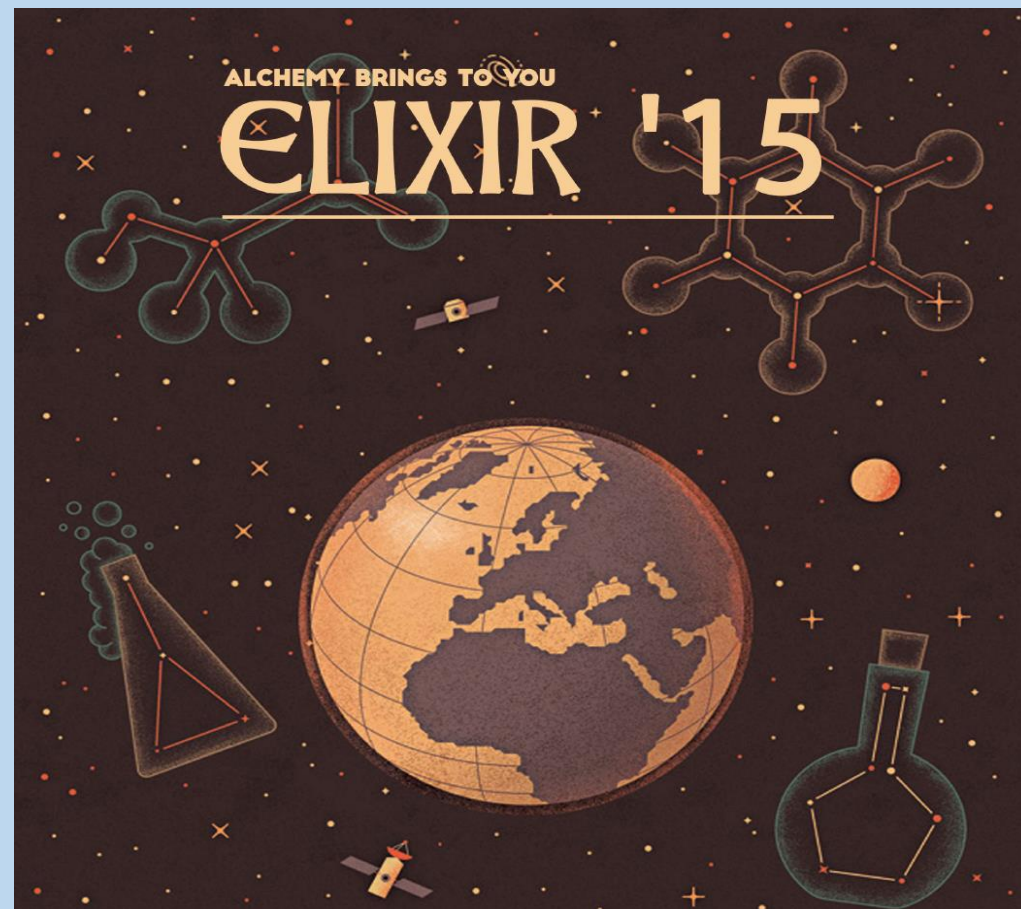


Fuel from sewage is the future and it's closer than you think

It may sound like science fiction, but wastewater treatment plants across the United States may one day turn ordinary sewage into biocrude oil, thanks to new research. The technology, hydrothermal liquefaction, mimics the geological conditions Earth uses to create crude oil, using high pressure and temperature to achieve in minutes something that takes Mother Nature millions of years. Using hydrothermal liquefaction, organic matter such as human waste can be broken down to simpler chemical compounds. The material is pressurized to 3,000 pounds per square inch - nearly one hundred times that of a car tire. Pressurized sludge then goes into a reactor system operating at about 660 degrees Fahrenheit. The heat and pressure cause the cells of the waste material to break down into different fractions - biocrude and an aqueous liquid phase. In addition to the biocrude, the liquid phase can be treated with a catalyst to create other fuels and chemical products.



For suggestion/feedback write to us at bphc.chemistry@gmail.com



Research Publications by M. Sc. Students



- (i) *Enhanced Photoinduced Electrocatalytic Oxidation of Methanol Using Pt Nanoparticle-Decorated TiO₂-Polyaniline Ternary Nanofibers*
Susmita Roy, Soumitra Payra, Swapna Challagulla, Rishav Arora, Sounak Roy, Chanchal Chakraborty.* *ACS Omega* 2018, 3, 17778–17788.
- (ii) *Weak Donor-/Strong Acceptor-Linked Anthracenyl π -Conjugates as Solvato(fluoro)chromophore and AEEgens: Contrast between Nitro and Cyano Functionality*, Moghal Zubair Khalid Baig, Banchhanidhi Prusti, Durba Roy, Prabhat Kumar Sahu, Moloy Sarkar, Ayushi Sharma, and Manab Chakravarty* *ACS Omega*, 2018, 3, 9114–9125.
- (iii) *A co-operative endeavour by nitrifying bacteria Nitrosomonas and Zirconium based metal organic framework to remove hexavalent chromium* T.Sathvika, , Smruthi Balaji, Mritunjai Chandra, Amitesh Soni, Vidya Rajesh, N.Rajesh,” ”, *Chemical Engineering Journal*, 360, (2019) 879–889.
- (iv) *Potential application of Sacchormyces cerevisiae and Rhizobium immobilized in multiwalled carbon nanotubes to adsorb hexavalent chromium* T. Sathvika, Amitesh Soni, Kriti Sharma, M. Praneeth, Manasi Mudalliar, Vidya Rajesh, N. Rajesh*, ”, ”, *Scientific Reports – (Nature group)* 8, (2018) 9862.
- (v) *Probing the interaction between fluoride and the polysaccharides in Al(III) and Zr(IV) modified tea waste using diverse analytical techniques* M.Barathi, A.S.K.Kumar, J..Kodali, Shivam Mittal, G.D. Samhith, N.Rajesh, *Chemistry Select*, 2 (2017) 10123.

Research Achievements (In last 5 years)



DST-FIST : 1 Crore (2014 - 2019)

No. of Projects running & Total amount: 12 and 2.87 crores

No. of Projects completed in last 5 years : 09 (1.51 crores)

Industrial Project: Premier Explosives (12.15 lakhs) +HBL (20 Lakhs)

No. of Ph.D. awarded: 10

No. of Ph.D. students (Ongoing): 39



Our Faculty

The Chemistry Department takes its pride in having a proficient team of faculties and excellent student-Instructor relationships. The strength of the department lies in the motivation, dedication and expertise of the faculty members.



Name: Prof. G Sundar
Position: Senior Professor & Director
Ph.D.: Cornell University, USA
Area of research: Theoretical Chemistry, Thermodynamics.
Email: sundar[at]hyderabad.bits-pilani.ac.in



Name: Prof. N.Rajesh
Position: Professor
Ph.D.: IIT Madras.
Area of research: Environmental Remediation, Materials, Analytical Chemistry.
Email: nrajesh[at]hyderabad.bits-pilani.ac.in



Name: Dr. Subit Kumar Saha
Position: Professor
Ph.D.: Indian Institute of Technology Kanpur.
Area of research: Fluorescence spectroscopy, Soft matter, Gemini surfactants, Protein-surfactant and DNA-surfactant interactions, Protein unfolding and refolding, Nanotubes of cyclodextrins and interactions with surfactants, Solvation dynamics.
Email: sksaha[at]hyderabad.bits-pilani.ac.in



Name: Prof. K. Sumithra
Position: Professor
Ph.D.: Cochin University of Science and Technology, Kerala
Area of research: Computational Chemistry; Low dimensional vdW heterostructures
Email: sumithra[at]hyderabad.bits-pilani.ac.in



Name: Prof. R. Krishnan
Position: Professor
Ph.D.: IIT, Madras.
Area of research: Inorganic Chemistry, Bioinorganic Chemistry, Nano-materials, Catalysis and Solar Energy Conversion.
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Name: Prof. K V G Chandra Sekhar
Position: Associate Professor
Ph.D.: BITS Pilani, Pilani Campus
Area of research: Medicinal and Synthetic Organic Chemistry
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Name: Prof. Jayanty Subbalakshmi
Position: Associate Professor
Ph.D.: University of Hyderabad
Area of research: Design, Synthesis, Characterisation and study of new Molecular Materials for Optical, Conducting and Biological applications
Email: jslakshmi[at]hyderabad.bits-pilani.ac.in



Name: Prof. Manab Chakravarty
Position: Associate Professor (HOD)
Ph.D.: School of Chemistry, Hyderabad
Area of research: Synthesis of organic functional materials for solid-state fluorescence and biological applications, Organophosphonates/phosphates
Email: manab[at]hyderabad.bits-pilani



Name: Prof. Anupam Bhattacharya
Position: Associate Professor
Ph.D.: University of Delhi
Area of research: Synthesis of fused heterocycles and their applications
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Name: Prof. G Ramakrishnan
Position: Associate Professor
Ph.D.: Korea Advanced Institute of Science and Technology (KAIST), South Korea.
Area of research: Lithography (photo, e-beam, nanoimprint etc), Functional Materials, Materials Design & Synthesis; Photo(catalysis); Biosensing & Biomaterials.
Email: ram.ganesan[at]hyderabad.bits-pilani.ac.in



Our Faculty



Name: Prof. Amit Nag
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Area of research: Fluorescence and Laser Spectroscopy, Plasmonics, Drug delivery
Email: amitnag[at]hyderabad.bits-pilani.ac.in



Name: Dr. Tanmay Chatterjee
Position: Assistant Professor
Ph.D.: Indian Association for the Cultivation of Science
Area of research: Visible-light-induced Organic Transformations, Development of Green Synthetic Methodologies, Fluoroalkylation Reactions, Synthesis of New Drug Molecules.
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Name: Dr. Himanshu Aggarwal
Position: Assistant Professor
Ph.D.: Stellenbosch University, South Africa.
Area of research: Metal-Organic Frameworks, Gas Adsorption, Crystallography, Thermal Expansion, Sensing, Humidity Control and Covalent Organic Frameworks.
Email: himanshu.aggarwal[at]hyderabad.bits-pilani.ac.in



Name: Dr. Balaji Gopalan.
Position: Assistant Professor
Ph.D.: IIT, Kanpur.
Area of research: Synthesis and Characterization of Magnetic Nanoparticles. Structural and Property Correlations in Magnetic Nanomaterials and Applications of Nanomaterials in Chemical and Bio-sensing.
Email: gbalaji[at]hyderabad.bits-pilani.ac.in



Name: Chanchal Chakraborty
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PhD: IACS Kolkata
Area of research: Metallopolymers, Electrochromic smart windows, Electro-catalysis, Fuel cells, Fluorescent polymers
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Name: Dr. Durba Roy
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Area of research: Computation Chemistry, Molecular Dynamics Simulation, Peptide Toxins, Polysaccharides, Clays etc.
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