AGENDA
Boron neutron capture therapy (BNCT) is a non-invasive modality of treating brain tumors as well as head and neck tumors through delivery of a molecule containing $^{10}$B atoms to the tumor, which absorb a neutron under low-energy neutron irradiation to yield unstable $^{11}$B nuclei that undergo fission to yield high energy alpha particles ($^4$He nuclei) and high energy lithium-7 ($^7$Li) nuclei that are limited in range to 5–9 µm, approximately the diameter of the target cell. The challenge for improving BNCT is to target tumor cells to enable selective and efficient delivery of the $^{10}$B atoms. Recognizing that matrix metalloproteinase (MMP) enzymes, especially gelatinases MMP-2 and MMP-9, as well as collagenase MMP-13, are upregulated in tumor cells, we selected to incorporate carborane clusters into scaffolds that are known to bind potently and selectively to these MMP enzymes.

Kevin Shurtleff, Utah Valley University, USA

Carborane-containing matrix metalloproteinase (MMP) enzyme inhibitors as tumor-targeting ligands for boron neutron capture therapy (BNCT)

Boron neutron capture therapy (BNCT) is a non-invasive modality of treating brain tumors as well as head and neck tumors through delivery of a molecule containing $^{10}$B atoms to the tumor, which absorb a neutron under low-energy neutron irradiation to yield unstable $^{11}$B nuclei that undergo fission to yield high energy alpha particles ($^4$He nuclei) and high energy lithium-7 ($^7$Li) nuclei that are limited in range to 5–9 µm, approximately the diameter of the target cell. The challenge for improving BNCT is to target tumor cells to enable selective and efficient delivery of the $^{10}$B atoms. Recognizing that matrix metalloproteinase (MMP) enzymes, especially gelatinases MMP-2 and MMP-9, as well as collagenase MMP-13, are upregulated in tumor cells, we selected to incorporate carborane clusters into scaffolds that are known to bind potently and selectively to these MMP enzymes.

Daniel P Becker, Loyola University Chicago, USA

Life cycle analysis as a decision-making tool for sustainable chemical production

Understanding the environmental and economic implications of new technologies in the chemical industry is critical to decision making related to technology investment and research priorities. Life Cycle Analysis (LCA) is a standardized method to quantify the environmental impacts of a product/service’s life cycle, which has been widely used to assess the environmental burdens of chemical production. However, quantifying the potential environmental impacts of new technologies using traditional LCA method is very challenging due to the lack of process data and the poor understanding of system effects and temporal/geographic changes.

Yuan Yao, North Carolina State University, USA
Development of a solid-phase catch-release linker system for cysteine alkylation

Manal Alanazi, University of Birmingham, UK

The modification of proteins with chemical species provides a wide range of opportunities to study, alter or exploit protein function. For example, antibody-drug-conjugates are currently receiving significant attention as tools to allow the selective delivery of therapeutic agents to specific cell types. The selective modification of proteins represents a significant chemical challenge because the reaction must modify the targeted residue selectively in the presence of other competing unprotected polypeptide side chains. Developing a solid phase catch-release system could provide clean products of alkylated cysteine thiols, based on liberation of the alkylated protein under mild conditions.

Practical planning for the aromatic essence creation process

Marcos Aurelio Gomes da Silva, Federal University of Juiz de Fora, Brazil

A field work may be carried out in a Botanical Garden in the region of Minas Gerais, mainly in the southern area where the fresh climate is prone to picking leaves at temperatures that do not alter the content of their metabolic structures, so that, can extract as much of its product as possible for analysis and research, which is proposed in this thesis.

Fluorescence emission color changes of acrylonitrile derivatives, structure and optical properties

María J Percino, Universidad Autónoma de Puebla, Mexico

Solid state lighting (SSL) of organic chromophores has attracted much attention due to their potential applications in devices such as light-emitting diodes, photovoltaic devices, and sensors. Tuning and controlling the wavelength of emission of an organic material is crucial to identify the appropriate application, and the optical properties of different dyes in the solid state strongly depend on the molecular structure and intermolecular interactions. Recently, organic chromophores that exhibit quenching of fluorescence in the solid state have been reported, and this phenomenon is termed aggregation-caused quenching (ACQ).
The new dimensions of quantum mechanical spectral analysis (QMSA)

Reino Laatikainen,
University of Eastern Finland, Finland

The coupled nuclear spins floating in sea of molecular electrons obey the laws of quantum mechanics so that frequencies of complex $^1$H NMR spectra can be calculated within experimental accuracy from chemical shifts and coupling constants. When the effects of molecular environment are added to the model, even the smallest spectral details can be interpreted. This forms the basics of computerized QMSA, pioneered by the computer programs like LAOCOON and NUMARIT. The potential of quantitative QMSA (qQMSA) has been recently realized and several groups work on novel software tools. The bottleneck of QMSA, that the computation time grow steeply with the size of spin-system, is not a serious problem, anymore.

Eco-friendly approach to synthesis of coumarinyl 1,2,4-triazoles

Mario Komar,
Faculty of Food Technology, Croatia

1,2,4-Triazoles, a heterocyclic compounds with a wide range of biological activities such as antibacterial, antifungal, antitumor, anticolvulsant, antiinflammatory and antimicrobial, exist in two tautomeric forms, $^1$H and $^4$H. Until recently, these heterocycles are usually prepared from 1,2,4-oxadiazoles in reaction with hydrazine, 1,3,4-oxadiazoles and hydrazides or thiosemicarbazides in basic conditions. Hereby we report a synthesis of 1,2,4-triazoles in deep eutectic solvents. DES is a mixture of a salt, usually choline chloride wich is hydrogen bond acceptor (HBA) and a hydrogen bond donor (HBD) such as alcohols, sugars, amides and carboxyl acids, which mostly exist as liquid at or below 100 °C.

Recovery of α chitin and minerals from marine biomass by using deep eutectic solvents

Bojana Bradic,
National institute of chemistry, Slovenia

The waste generated during the industrial processing of shrimp is about 40–50% of its total weight. Due to the increased world production and consumption of shrimp, the seafood industry is focused on an appropriate destination and/or reuse of this waste, since its improper disposal causes serious environmental problems; in fact, this waste can be utilised for production of importable components. [1] Shrimp shells waste consists primarily of protein (30–40 %), mineral salts (30–50 %), chitin (20–30 %), and small quantities of lipids and pigments. Chitin is considered the second most abundant organic resource on the earth next to cellulose with annual production of around 2million ton. [2]
Epoxy resins are the most popular materials in the polymer history. However, most epoxy resins were produced from the petrochemical materials. To achieve sustainability, we provide a new strategy to prepare fully-bioased epoxy resins from the esterification of bio-based diacids with eugenol, followed by oxidation of the allyl bonds. Furthermore, the epoxy resins are designed to exhibit both the the active ester and epoxy groups, so they can be thermally cured through the exchange reaction of active ester and epoxy groups. Therefore, no additional curing agents are required to cure the epoxy resins.

Vinylbenzyl ether-terminated oligo(2,6-dimethyl-1,4-phenylene ether) (1) has been commercialized by Mitsubishi Gas Chemical in the name of OPE-2St. OPE-2St is used in high-frequency printed circuit board due to its low-dielectric characteristic after curing of vinyl groups. However, there is room for improvement in properties. In this work, we describe the preparation of three new OPEs: vinylbenzoate-terminated OPE (2), 3,5-bis(vinylbenzyl ether)benzoate-terminated OPE (3), and 3,5-bis(vinylbenzyl ether)benzyl ether-terminated OPE (4) and compare their fundamental materials properties to (1). We discuss the effect of the number of vinyl groups (two or four) and the linker (benzyl ether or benzoate) on the properties of OPE thermosets.

Energy storage systems with higher energy density and good electrochemical performance are the urgent demand in new energy industry for electric vehicles. Rechargeable aqueous Zn-ion batteries (ZIBs) are particularly attractive owing to the safety, nontoxicity, inexpensiveness and high energy density. Here, we propose a new prototype of liquid Zn-Ferrum batteries (ZFBs) using metal Zinc as anode and aqueous Fe(II/III) redox couple as catholyte. This battery presents excellent electrochemical performance with the capacity of 352 mAh g⁻¹ at an average discharge voltage up to 1.25 V, an energy density of 391 Wh kg⁻¹, a power density of 2.2 kW kg⁻¹ at current density of 2 A g⁻¹, and long cycling life: no evident capacity fading after 5000 cycles.
Codetermination of sphingomyelin and cholesterol in cellular plasma membrane in sphingomyelin-depletion-induced cholesterol efflux

Danjun Fang, Nanjing Medical University, China

Quantification of multiple lipids with different contents in plasma membrane in single cells is significant, but challenging, for investigating lipid interactions and the role of dominant protein transporters. In this paper, co-monitoring the alteration of low-content sphingomyelin (SM) and high-content cholesterol in plasma membrane of one living cell is realized by use of luminol electrochemiluminescence (ECL) for the first time. Concentrations of SM as low as 0.5 μM are detected, which permits the measurement of low-content membrane SM in single cells. More membrane cholesterol is observed in individual cells after depletion of membrane SM, providing direct evidence about SM-depletion-induced cholesterol efflux.

Bioinspired hierarchical graphene oxide wrinkles for flexible sensors, actuators and manipulators

Zengyong Chu, National University of Defense Technology, China

Recently, flexible and wearable devices are increasingly in demand and graphene has been widely used due to its exceptional chemical, mechanical and electrical properties. Building complex buckling patterns of graphene is an essential strategy to increase its flexible and stretchable properties. Inspired by the gyrification in the human brain, and the hierarchical micropapillae on the superhydrophobic surface of natural rose petals, herein we introduce a simple three-dimensional (3D) shrinking method to generate the cortex-like patterns using two-dimensional (2D) graphene oxide (GO) as the building blocks. And a facile dimensionally controlled four-dimensional (4D) shrinking method was further proposed to generate hierarchical buckling patterns on cylindrical substrates.

Electrochemiluminescence determination and removal of membrane choline in living cells

Shuohan Huang, Nanjing Medical University School of Pharmacy, China

Phosphatidylcholine (PC) and sphingomyelin (SM) are two important phospholipid components of cell membranes that are positively correlated with cardiovascular diseases. In the current enzymatic quantification method, PC and SM first react with specific enzymes to generate choline, and then the choline is irreversibly catalyzed by choline oxidase into hydrogen peroxide and glycine betaine. The lipid content was measured by detecting the amount of peroxidase. However, plasma, tissue and cell membrane all contain a small amount of choline that may confound the measurement of PC and SM.
E-BABE- Influence of the vertical flow velocity component on flow-accelerated corrosion in 90° elbow

Xiaodong Si,
Southeast University, China

Flow accelerated corrosion (FAC), which causes the fracture of the carbon steel piping in the worst cases, is at present one of the most important subjects in coolant systems of fossil and nuclear power plants. Experimental and numerical studies are conducted to investigate the effects of turbulent parameters on flow-accelerated corrosion (FAC) behaviour of low carbon steel at 90° elbow. The experimental testing of flow-accelerated corrosion behaviour was carried out by the array electrode technique in a circulating loop system. The measurement of electrochemical corrosion test shows that the maximum corrosion current density is located in the extrados side of test section while the minimum value appears at the intrados side, consistent with the typical flow-accelerated corrosion induced failures of turbine plant pipelines and equipment.

Carbon nanomaterials/polymers nanocomposites and electrochemical energy storage

Jianxin Geng,
Beijing University of Chemical Technology, China

With the rapid developments of the markets of portable electronics and electric/hybrid vehicle, efficient energy storage and conversion materials with high power, high energy, and long life span are urgently needed. Rational design of polymer composites is an effective approach to develop high-performance energy materials. With the unique structures and outstanding physical and chemical properties, carbon nanomaterials including graphene and carbon nanotubes are the ideal candidates for energy storage and conversion materials. In our research, we focus on the fundamental issues such as the surface modification of carbon nanomaterials, the manipulation of multi-scaled structures of the composites as well as the relationship between the structures of the composites and the performance of the energy storage and conversion devices.

Novel rotational valve controlled paper-based microfluidic chip and its application in environmental and biochemical analysis

Bowei Li,
Yantai Coastal Zone Research Institute, China

We integrated the moving valve on a paper chip and the control of the fluid is realized by the connection and disconnection between the movable channels through the rotational valves. This method can be used to analyze a variety of environmental pollutants and tumor markers, demonstrating that the platform has good applications for environmental detection and bioanalysis in environmental pollutants. 1. We proposed a new strategy for manipulating capillary driven fluids through a real-time controllable moving valve. The use of movable valves allows control of the movement of the paper path between the different layers, enabling the connection or disconnection of the channels. This fabrication process is very simple, versatile, and can be used on microfluidic paper chips of varying complexity levels.
E-BABE- Improving the removal of sulfuric acid droplets in the process of limestone-gypsum desulfurization

Rui Zhang, Southeast University, China

It is commonly accepted that the sulfuric acid droplets is unfavorable to human health and environment. And this issue is concerned widespread. According to the statistics, the main source of sulfuric acid droplets is from power-plant. This paper aims to improve the removal of sulfuric acid droplets during desulfurization. Trays are installed into the desulfurization tower to uniform the distribution of the flue gas and increase the contact time. The results shows that the installation of the tray promotes the removal performance of sulfuric acid droplets.

Reaction mechanism and kinetic properties of IIIB transition metals Fe/Co/Ni and their metal oxides FeO/CoO/NiO for catalytic oxidation of methane to methanol: A reliable calculation strategy

Hongxia Liu, Inner Mongolia Normal University, China

The related energy and multi-channel oxidation of methane to methanol reaction potential energy surface under the IIIB transition metal and its oxides catalysts and its dynamic characterization have been investigated with the density functional calculations. The geometries were fully optimized by the B3LYP level. The calculation results show that the transition barriers and the reaction rate constant at 298 K all show oscillation modes, with the increase of atomic number. While the calculated reaction energies (E/kcal mol\(^{-1}\)) and the energy of hyper conjugative interaction (E(2)) are gradually increased.

Synthesis of amphiphilic PEG-b-PSf-b-PEG triblock copolymers and its application in separation membranes

Ning Wang, Yantai Coastal Zone Research Institute, China

Recently, ultrafiltration (UF) membranes have faced great challenges including the fine control of membrane surfaces for high filtration performances and antifouling properties in treating complex solution systems. Here, a particular type of amphiphilic block copolymer polyethylene glycol-block-polysulfone-block-polyethylene glycol (PEG-b-PSf-b-PEG) was synthesized through one-pot step-growth polymerization with mPEG [monomethylpoly(ethylene glycol)] as two ends to achieve the mobility of hydrophilic polymer chains. Without any other polymers or additives involved, the PEG-b-PSf-b-PEG triblock copolymer UF membrane was fabricated through the non-solvent-induced phase separation (NIPS) method.
Numerous [m,7,n]-tricyclic structural motifs are found in a variety of icetexane natural products, many of which have a broad spectrum of biological activities. Among various strategies for the construction of seven-membered carbocycles, transition metals are utilized as catalysts because of their inherent potential for causing a rapid increase in skeletal complexity. Conjugated enynals and enynones serve versatile substrates for the synthesis of such [m,7,n]-tricyclic skeletons via metal-catalyzed reactions.

Solvent extraction kinetics of silver with methyl ketonic p-tert-octylcalix[4]arene in the modified lewis cell technique

The solvent extraction kinetics of silver with methyl ketonic p-tert-octylcalix[4]arene as a hydrophobic extractant has been studied using a modified Lewis cell system. The effects of parameters affecting the extraction efficiency such as stirring speed, temperature, and silver concentration were investigated.

The use of tetrathiafulvalene to improve mercury determination in airborne particulate matter

Recent studies emphasizing the harmful effect of mercury (Hg) on the environment have increased the demand for low level mercury analysis towards improvement of global Hg pollution control. Multi-elemental inductively coupled plasma mass spectrometry (ICP-MS) determination of Hg can lack accuracy due to low stability of Hg ions in solutions that are susceptible to adsorption/volatilization with negative or positive bias. In this study, sampling and analysis of airborne Hg in Singapore was carried out using our recently developed ICP-MS method.
Mechanism of oxidations of a chiral biomass-derived substrate namely isosorbide

Basim H. Asghar,
Umm Al-Qura University,
Saudi Arabia

Isosorbide is considered to be a versatile biogenic platform compound for the production of chemicals, and has been widely used for the synthesis of elaborate molecules including chiral ionic liquids, phase-transfer catalysts, and ligands (amino alcohols, amines, mono- and diphosphines, etc.). Moreover, isosorbide has been used as a starting material for pharmaceutical applications as well as for organic solvents or fuels, and as a building block for biopolymers. Oxidation reactions are very important in organic synthesis.

HPLC-Fluorescence method for the enantioselective analysis of propranolol in rat serum using immobilized polysaccharide-based chiral stationary phase

Aymen Al-Suwailem,
King Saud University, Saudi Arabia

A stereoselective high-performance liquid chromatographic (HPLC) method was developed and validated to determine S-(+)- and R-(+)-propranolol in rat serum. Enantiomeric resolution was achieved on cellulose tris(3,5-dimethylphenylcarbamate) immobilized onto spherical porous silica chiral stationary phase (CSP) known as Chiralpak IB. A simple analytical method was validated using a mobile phase consisted of n-hexane-ethanol-triethylamine (95:5:0.4%, v/v/v) at a flow rate of 0.6 mL min⁻¹ and fluorescence detection set at excitation/emission wavelengths 290/375 nm. The calibration curves were linear over the range of 10–400 ng mL⁻¹ (R = 0.999) for each enantiomer with a detection limit of 3 ng mL⁻¹.

Comparison between Sn modified single crystal and preferentially Pt electrodes towards ethanol oxidation in acidic medium

A A El-Shafei,
Mansoura University, Egypt

Polycrystalline, preferentially oriented and low-index plane Pt single crystal electrodes modified by submonolayer deposition of Sn have been tested for ethanol oxidation in acidic media using cyclic voltammetry and chronoamperometry. In contrast to spontaneous deposition, forced deposition facilitates the irreversible adsorption of Sn, in particular on Pt(110), and allows the study of electrochemical activity of Sn modified Pt with all electrodes understudy. For all substrate planes, Sn adlayer enhance the current greatly the ethanol oxidation process.
The protective effect of the bilberry extract on the level of oxidative stress in rats exposed to hepatotoxic effects of carbon tetrachloride

Dejan Popovic, University of Nis, Serbia

The protective activity of the anthocyanins from the bilberry extract in the acute liver damage in rats caused by CCl₄ (1.5 ml/kg i.p.) was examined. The mechanism of the acute hepatotoxicity was based on an excessive production of the reactive metabolites CCl₄, which led to the morphological liver cells damage through the lipid peroxidation induction and oxidative stress. The membrane damage caused the enzyme leakage from the hepatocytes and increased activity of AST and ALT in the serum. The acute CCl₄ poisoning resulted in a significant increase of the pro-oxidative (MDA and GSSG) and a decrease of the anti-oxidative (GSH, CAT, SOD, GST, GPx, and GR) markers in the liver.

Transition metal complexes/organometallic compounds as anticancer/anti HIV drugs or in pharmaceutical industry

Prakash Kinthada, JNTU University

Cancer is a dreadful disease and any practical solution in combating this disease is of paramount importance to public health. Cancer patients have burdened by drug induced toxic side effects, and no turned to seek help from the complementary and alternative medicine hoping for a better cure. Research on Platinum based drugs and Non Platinum based drugs is a Multi-Million Dollar Industry in USA and there is every need to produce safe drugs for the cure of this monstrous disease. Flavonoids have a long history of use in traditional medicines in many cultures. The phytochemical, curcumin is one of the major dietary flavonoid, belonging to a group of flavonol, Curcumin is a natural polyphenol. It is highly potential molecule capable of preventing and treating various cancers

Role of plant extracts for enhancing photocatalytic activity

Seema Garg, Amity University

In the present work, bismuth oxyhalides (BiOX, X= Cl, Br and I) and their composites have been successfully synthesized Neem leaf extract. Leaf extract is known to possess anti-oxidant and stabilizing properties that aids in the immediate reduction and stabilization of the metal ions into their corresponding nanostructures. To obtain a better understanding of our results, the BiOX and their composites were also synthesized by hydrolysis method (without leaf extract). A comparative study was envisaged between both BiOX and its composites towards the degradation of organic pollutants.
Synthesized silver nanoparticle using gallic acid for inhibition of breast cancer

Amrish Chandra,
Amity University

The targeted drug delivery of anticancer agent is required for achieving the desired therapeutic potential in breast cancer cells without affecting healthy cells. The main aim was to synthesize and optimize silver nanoparticles formulation in water-in-oil microemulsion using Gallic acid and evaluate its antibacterial and anticancer efficacy in breast cancer cell line. The optimized silver nanoparticles were characterized using various techniques such as Dynamic light scattering (DLS), Scanning electron microscopy (SEM), Zeta potential, Fourier transform infrared (FTIR) spectroscopy and physicochemical properties.

Development and adhesion study of adhesive system from bio-material for wood bonding

Poorvesh D Rathod,
Institute of Science and Technology for Advanced Studies and Research

Keeping in view the environmental hazards due to formaldehyde and volatile organic compound emission from the adhesives synthesized from petroleum base stocks, Wood adhesive were formulated using vegetable oil. Vegetable oil based adhesive can be used to replace adhesives synthesized from petroleum base stocks used for wood. The reaction was confirmed by the FT-IR spectroscopy. Gel Permeation Chromatography (GPC) was used to study the molecular weight of prepared adhesives.

Nanomaterials for therapeutic and sensing applications

Sudarshan Kini,
Nitte University

Nanotechnology application in biomedical science has emerged as a promising tool for therapeutic applications. Understanding the surface chemistry and knowledge of chemical conjugation has expedited the nanomaterial fabrication for therapeutic and sensing applications. Functional nanosurface conjugates made of thiols, amine and carboxyl moieties not only facilitated surface passivity but also enhanced aqueous dispersibility, biocompatibility and therapeutic efficacy. Controlled release nano-drug formulation of chitosan-conjugated PLGA has shown to target multidrug-resistant EMT6/AR1 cell lines after bypassing the drug efflux process.
Stable and Reusable Pd-BNPs catalyzed stereoselective synthesis of \( (E) \)-3-Alkylidene oxindoles

The aesthetic simplicity of multicomponent processes, and domino reactions have enabled the synthetic scientific community to build pharmaceutically and industrially important complex architecture in a single step without isolating intermediates. Among these, 3-Alkylidene oxindoles reserves a particular interest due to their broad biological spectrum, serve as key intermediates for the synthesis of biologically important alkaloids and drug molecules. Herein we present, an efficient, binaphthyl-backbone stabilized Pd nanoparticles (Pd-BNP) catalyzed single step, stereoselective synthesis of \( (E) \)-3-Alkylidene oxindoles.

Naziya Parveen, Indian Institute of Technology

Quinolinium Modified β-Cyclodextrin: An ionic ligand for Cu(I) towards sustainable A3-coupling and metal-free three-component tandem cyclization of aldehydes, amines and alkynes in aqueous medium

An ionic Cu(I) complex (Cu(I)@Qun-β-CD), stabilized by water soluble quinolinium modified β-cyclodextrin(Qun-β-CD) with an 8-N-pentyl side chain, was prepared and characterized by ESI-Mass, NMR and UV-Visible spectroscopies and also molecular modelling studies. The synthesized Cu(I)@Qun-β-CD was found to be highly efficient in promoting A3-coupling reaction of various aldehydes, amines and terminal alkynes to yield propargylamines via C-H activation in acetonitrile medium. The prepared Qun-β-CD (C) alone, without any metal ion, follows a different course exhibiting excellent catalytic efficiency in an intramolecular tandem cyclisation reaction of the same reagents to yield quinolines via C-H activation in aqueous medium.

Raihana Imran Khan, Manonmaniam Sundaranar University

Pharmacophore modeling, synthesis, scaffold hopping and biological β-Hematin inhibition interaction studies as antimalaria compounds: An approach for multitarget anticancer drug design

Exploring potent compounds is a critical first step in the multi-target drug discovery. The primary mechanism of heme detoxification in malaria parasites is hematin crystallization and the target of the antimalaria compounds. A series of chloroquine analogues were designed using the repositioning approach to develop new anticancer compounds. The fingerprints of the protein ligand interaction and ADMET descriptors are used to build and assess’ model for structure based drug discovery to develop new scaffold based on chloroquine hybrid δ-hematin inhibitors. In the present study, 50 novel potent chloroquine hybrid β-hematin inhibitors with their IC50 values were collected, was applied.

Neda Fayyazia, Isfahan medical university
Impact of the application of pesticides on the concentration of some heavy metals on vetagetales (spinach and sorrel)

Hassan Garba Wafi,
Adamawa State University,

The plant protection products in additions to their specific role to kill pest on vegetables were observed to exhibit a characteristics impact towards increasing heavy metals bioavailability within soil and streaming rate in plants. In this study, the role of pesticide 2,2-dichlorovinyl dimethyl phosphate in influencing heavy metal uptake by the plants was evaluated by comparing the concentration in roots, stem and leaves of sorrel (Rumex acetosa) cultivated with and without pesticide. Atomic absorption spectrophotometry was used to determined the concentrations of heavy metals in plant.

Synthesis, characterization and biological activities of 1,3-disubstituted thioureas

Amara Mumtaz,
Comsats University
Islamabad

Thioureas are medicinally significant class of organic compounds. Synthesis of different thioureas starting from medicinally significant heterocyclic precursors was carried out. Structures were confirmed by IR, $^1$HNMR and $^{13}$CNMR analysis. The synthesised compounds were tested for their cholinesterase enzyme inhibition against acetyl and butyl cholinesterase and and antinurease enzyme inhibition activities. The tested compounds were found very active and potential candidates for future drugs.

Novel silica supported pyrazole compounds for water purification

Madeeha Batool,
University of the Punjab

Heavy metal poisoning in waste water is a serious threat to environment. A novel organic-inorganic hybrid was synthesized by immobilizing derivative of amine modified pyrazole i.e. 1-(1,3-diphenyl-5-hydroxy-1H-pyrazol-4-yl)ethanone on various silica based supports. FTIR spectroscopy, $^{29}$Si and $^{13}$C CP MAS solid state NMR, Scanning Electron Microscopy, BET surface area, X-Ray Diffraction, Thermal gravimetry and Elemental Analysis were used to characterize this new chelating agent.
Polymers have the alternate of variety of things in our life. Polyurethane is one of them with marvelous properties can be seen involved in coatings, sealants, adhesives, textile, automotive and many industries. If the property profile of polyurethane is seen it can be said that their properties are modifiable to cope the challenging requirements of modern era. The combination of polyurethane with cheaper material has now been exercised mapping the roads to new products. One of the worthy components that when incorporated with polyurethane gives excellent mechanical and chemical properties.

Synthesis and characterization of polyurethanes acrylate copolymer based on cycloaliphatic diisocyanate

Sajida Perveen,
Government College University Faisalabad

European chemistry is the major european industry for the development of health, basic need and daily use of life, reduction in poverty and hunger in the world like South Asia particularly in Pakistan.

The aim of presentation consist of chemistry, European chemistry, health, life, poverty and hunger were studded and reported that European chemistry is the major industry for the development of health, basic need and daily use of life, reduction in poverty and hunger in the world like South Asia particularly in Pakistan. The study reported that Chemistry is the science of the composition, structure, properties and reactions of matter, especially of atomic and molecular systems. In a very simple words, chemistry is the composition, structure, properties and reactions of substance.