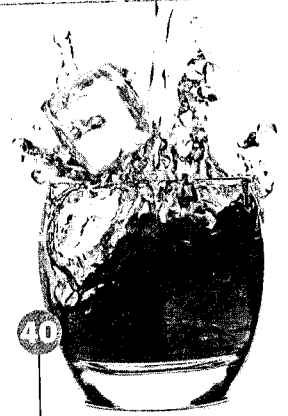




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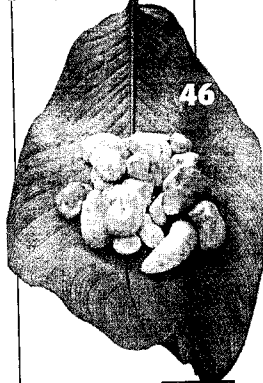
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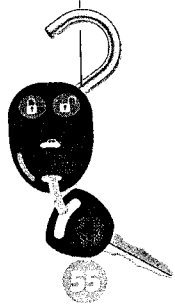
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All in the genes?

Genetics may have some but not all the answers to humanity's past

Letting go...of patents

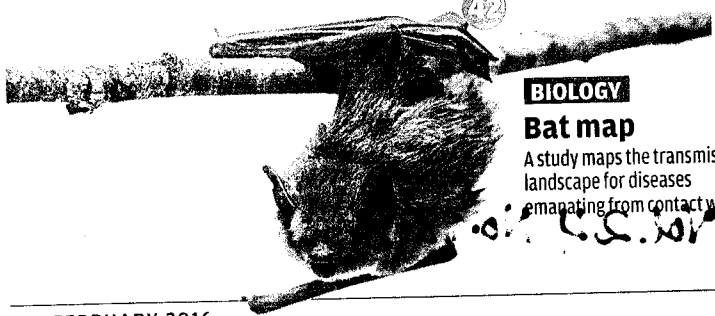
Firms like Toyota and Tesla are freeing up their patents to expand the market for alternative fuel vehicles



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A study maps the transmission landscape for diseases emanating from contact with bats

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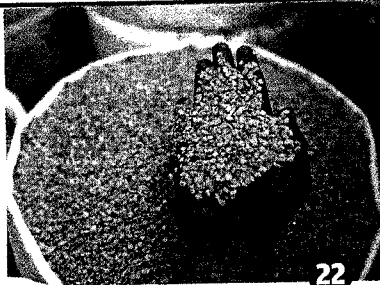
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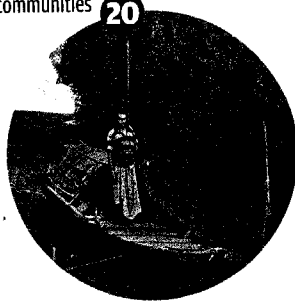
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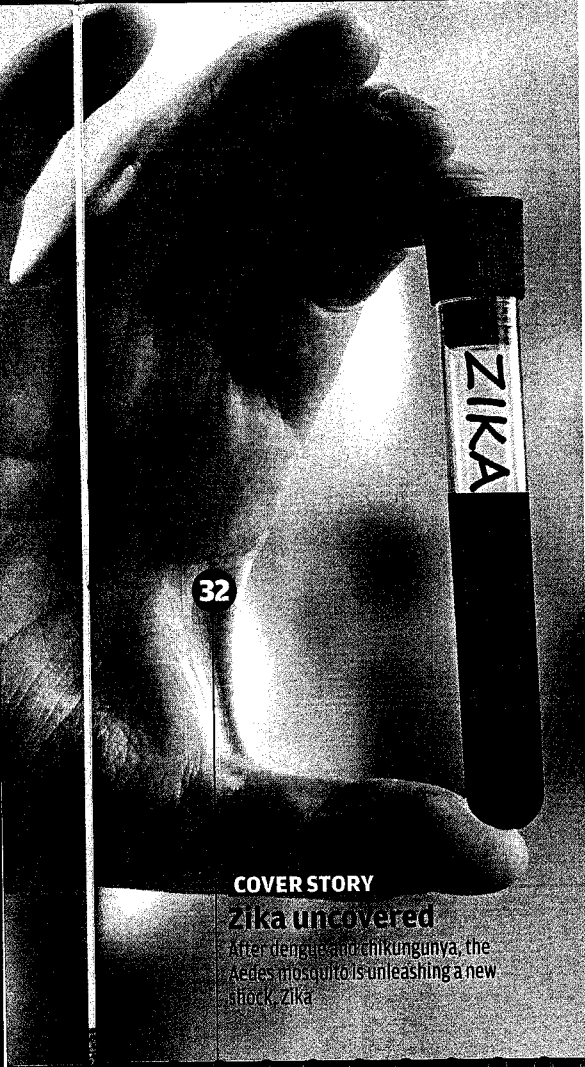
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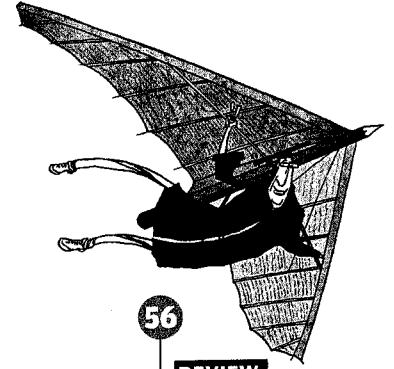
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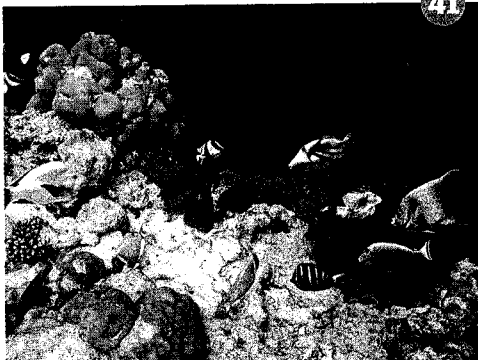


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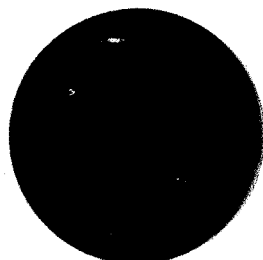
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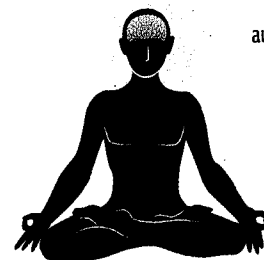
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Scientists find evidence of a new planet in the solar system

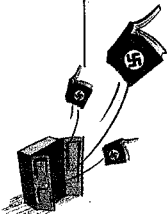
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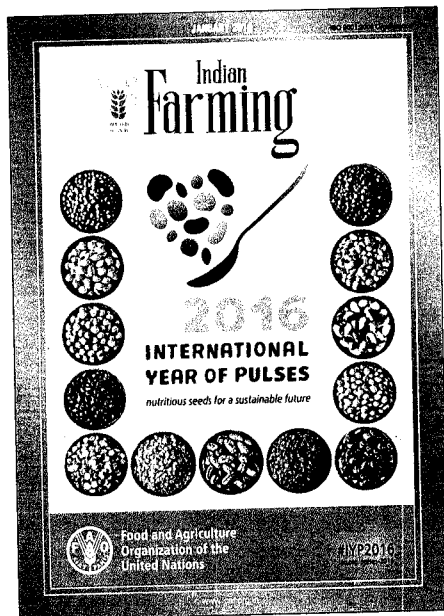
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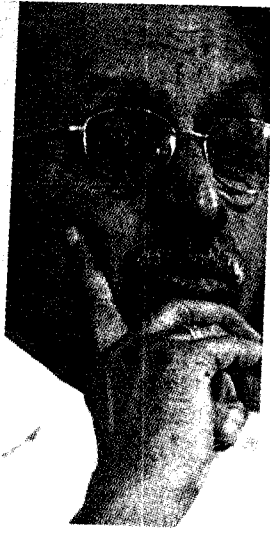
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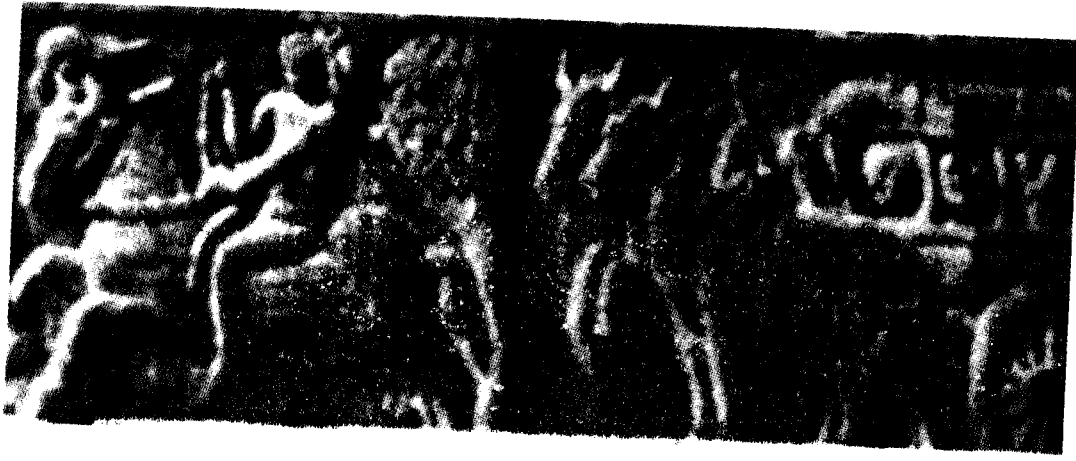


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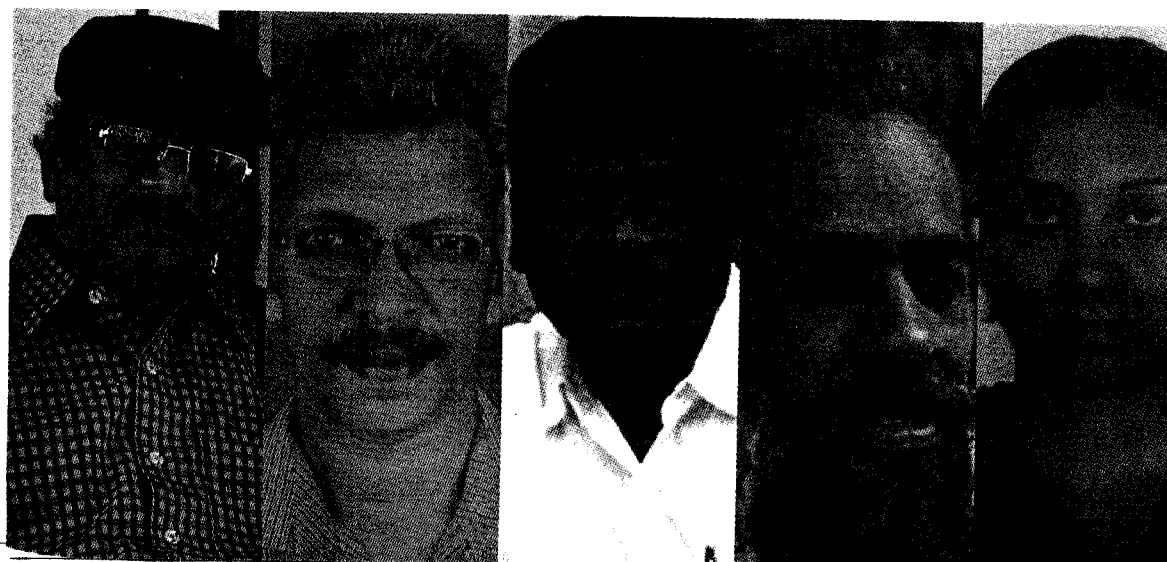
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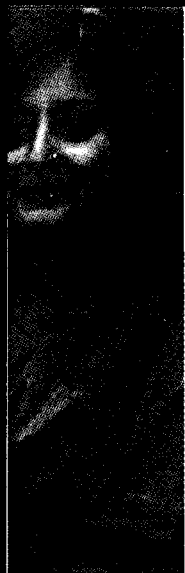
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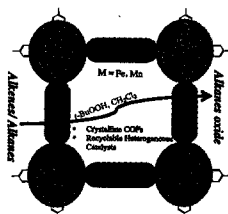
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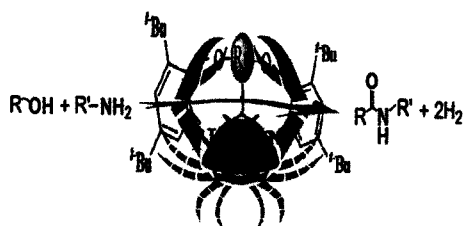
Regular Articles



Design and synthesis of nanoporous perylene bis-imide linked metalloporphyrin frameworks and their catalytic activity

Manoj Kumar Singh and Debkumar Bandyopadhyay 1-8

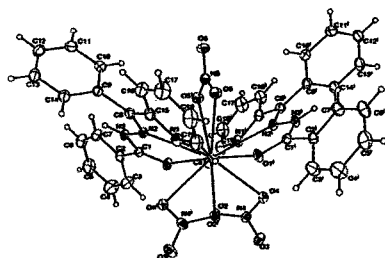
Two nanoporous perylene bis-imide linked metalloporphyrin framework catalysts have been synthesized. They show interesting peroxidase activity for the selective oxidation of alkanes and alkenes even after ten cycles with negligible catalyst degradation.



Design and synthesis of ruthenium(II) OCO pincer type NHC complexes and their catalytic role towards the synthesis of amides

Muthukumaran Nirmala and Periasamy Viswanathamurthi. 9-21

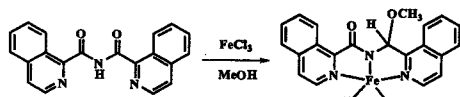
Three new air-stable Ruthenium(II) complexes bearing bis-phenolate-*N*-heterocyclic carbene ligand were synthesized and characterized by FT-IR, NMR and ESI-Mass. The catalytic study of these complexes towards amidation of alcohol with amines was conducted. This new protocol is effective for many electronically diverse alcohols and amines, providing corresponding amide derivatives in good to excellent yields.



Synthesis, spectral properties and DNA binding and nuclease activity of lanthanide (III) complexes of 2-benzoylpyridine benzhydrazones: X-ray crystal structure, Hirshfeld studies and nitrate- π interactions of cerium(III) complex

Karreddula Raja, Akkili Suseelamma and Katreddi Hussain Reddy. . . 23-35

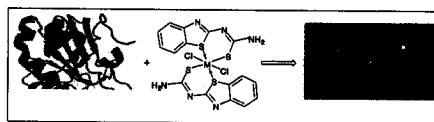
The butterfly-shaped, 12-coordinated cerium(III) complex with 2-benzoylpyridine benzhydrazones having nitrate- π supramolecular interactions shows remarkable nuclease activity in the presence of oxidant.



Iron(III) Chloride mediated reduction of Bis(1-isoquinolylyl)carbonyl amide to an Amide

Rojalin Sahu, Papuli Chaliha and Vadivelu Manivannan 37-42

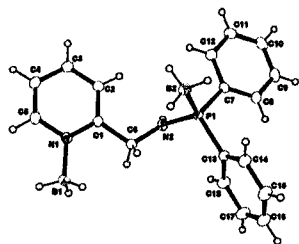
In methanol, FeCl₃ reacted with bis(1-isoquinolylyl)amide affording *N*-((1-isoquinolylyl)(methoxy)methyl)isoquinoline-1-carboxamide bound iron(III) complex. This reaction involves reduction of one of the two carbonyl groups to (methoxy)methyl group.



Synthesis, characterization and studies on antioxidant and molecular docking of metal complexes of 1-(benzo[d]thiazol-2-yl)thiourea

Harinath Yapati, Subba Rao Devineni, Suresh Chirumamilla and Seshaiyah Kalluru 43-51

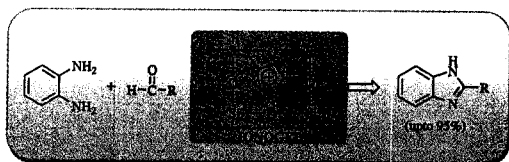
1-(benzo[d]thiazol-2-yl)thiourea (btt) and its metal(II) complexes have been synthesized and characterized by spectral and analytical data. Biological activity studies revealed that the antioxidant activity of the ligand was found to be enhanced on complexation with metal ions. The docking data revealed that copper complex selectively binds to the crucial amino acid residues in the active site of 3MNG.



Formation of BH_3 Adducts with Pyridine-2-Methylaminophosphine ligands: An experimental and computational study

Harinath Adimulam, Dwijendra P Kukri, Bhabani S Mallik and Tarun K Panda 53–60

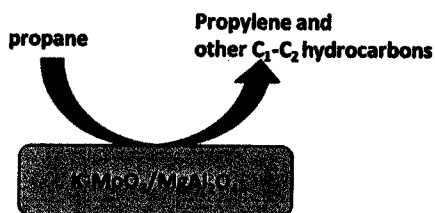
Experimental and computational studies have been carried out to demonstrate the P-coordination and N-coordination of various pyridine-2-methylaminophosphine ligands towards the BH_3 group.



1,3,5-Trimethylpyrazolium chloride based ionogel as an efficient and reusable heterogeneous catalyst for the synthesis of benzimidazoles

Pankaj Sharma and Monika Gupta 61–65

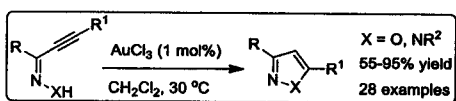
An efficient synthetic approach for the synthesis of benzimidazoles catalyzed by highly active ionogel under solvent-free conditions has been described.



Oxidative dehydrogenation of propane with $K-MoO_3/MgAl_2O_4$ catalysts

Serkan Naci Koc, Kubra Dayioglu and Hasan Ozdemir. 67–71

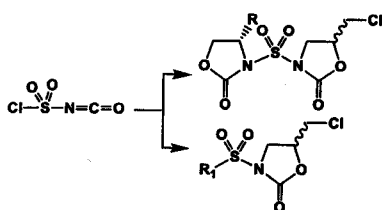
The conversion of propane increased with temperature and total hydrocarbon selectivity increased with molybdenum oxide content. Potassium addition suppressed the acidity of catalysts due to interaction with MoO_3 sites. For this reason total hydrocarbon selectivity highly increased.



Cycloisomerization of acetylenic oximes and hydrazones under gold catalysis: Synthesis and cytotoxic evaluation of isoxazoles and pyrazoles

J C Jeyaveeran, Chandrasekar Praveen, Y Arun, A A M Prince and P T Perumal 73–83

An integration process for the synthesis of isoxazoles and pyrazoles was achieved by taking advantage of the gold catalyzed cycloisomerization strategy. These compounds show cytotoxic effect against COLO320 cancer cells with IC_{50} values ranging between 38.9 and 55.9 μM .



Synthesis and antibacterial activity of new chiral *N*-sulfamoyloxazolidin-2-ones

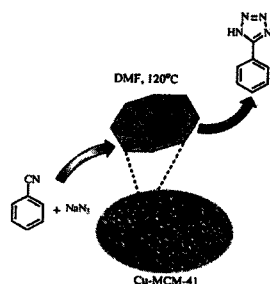
Fouzia Bouchareb, Malika Berredjem, Samira Ait Kaki, Amel Bouaricha, Abdeslem Bouzina, Billel Belhani and Nour-Eddine Aouf 85–91

We have developed the synthesis of new series of 5-chloromethylsulfamoyloxazolidinone and *N,N*-bis-oxazolidinones-sulfone in three steps, starting from 1,3-dichloropropan-2-ol, and chlorosulfonyl isocyanate. The structures of all compounds were confirmed by usual spectroscopic methods. The *in vitro* antibacterial activity of these compounds was evaluated.

Cu-MCM-41 nanoparticles: An efficient catalyst for the synthesis of 5-substituted 1*H*-tetrazoles via [3+2] cycloaddition reaction of nitriles and sodium azide

Mohammad Abdollahi-Alibeik and Ali Moaddeli 93–99

Nano-sized Cu-MCM-41 mesoporous molecular sieves with various Si/Cu molar ratios were synthesized by direct insertion of metal ions at room temperature. [3+2] cycloaddition reaction of various types of nitriles and sodium azide (NaN₃) were studied in the presence of nano-sized Cu-MCM-41 as an efficient recoverable heterogeneous catalyst.



Thiophene-bithiazole based metal-free dye as DSSC sensitizer: Effect of co-adsorbents on photovoltaic efficiency

Jayanthy S Panicker, Bijitha Balan, Suraj Soman, Tanwistha Ghosh and Vijayakumar C Nair 101–110

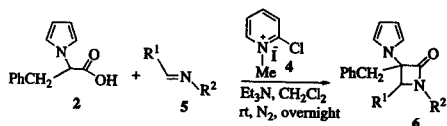
A benzothiophene-bithiazole based metal-free sensitizer end-functionalized with cyanoacrylic acid acceptor was synthesized. Photophysical properties were studied and used for dye sensitized solar cell (DSSC) application. The effect of various co-adsorbents on the DSSC performance was investigated.



Experimental and theoretical investigation of benzyl-*N*-pyrrolylketene, one-step procedure for preparing of new β -lactams by [2+2] cycloaddition reaction

Masoumeh Behzadi, Kazem Saidi, Mohammad Reza Islami and Hojatollah Khabazzadeh 111–117

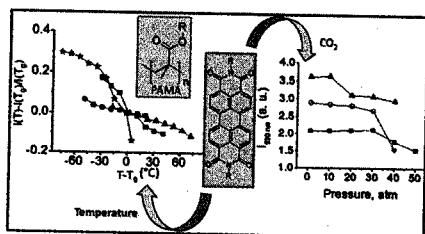
3-phenyl-2-(1-*H*-pyrrol-1-yl) propanoic acid as a ketene source has been used in synthesizing of Monocyclic-2-azetidiones. Hindrance in ketene and imines successfully controlled the diastereoselectivity. DFT calculation indicated that Benzyl-*N*-pyrrolylketene has unconjugated structure and the pyrrolyl ring is perpendicular to the ketene plane in both twisted and planner structures.



Effects of temperature and CO₂ pressure on the emission of *N,N'*-dialkylated perylene diimides in poly(alkyl methacrylate) films. Are guest-host alkyl group interactions important?

Kizhmuri P Divya, Michael J Bertocchi and Richard G Weiss . . . 119–132

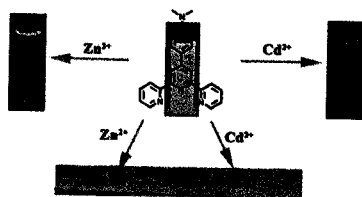
Experiments with four perylene diimide derivatives in five poly(alkyl methacrylate)s over wide temperature ranges and varying CO₂ or N₂ pressures indicate that fluorescence changes of the guest molecules are controlled primarily by chain relaxations rather than hole free volumes in the polymer matrixes.



Highly selective detection of Zn²⁺ and Cd²⁺ with a simple amino-terpyridine compound in solution and solid state

Duobin Chao 133–139

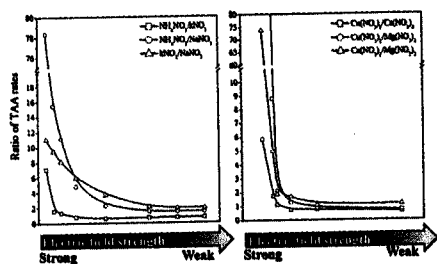
A simple amino-terpyridine compound exhibits highly selective detection of Zn²⁺ and Cd²⁺ in solution and solid state. The resulting complexes exhibited emission in solution and solid state.



Impact of electric field on Hofmeister effects in aggregation of negatively charged colloidal minerals

Ying Tang, Hang Li, Hualing Zhu, Rui Tian and Xiaodan Gao 141-151

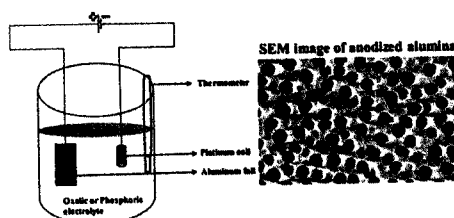
Aggregation kinetics of negatively charged colloids in nitrate solutions with various cation species were studied. The pronounced Hofmeister effects observed in strong electric field and the corresponding calculated results for interaction forces indicated that ionic polarization in strong electric field would be responsible for Hofmeister effects in aggregation of colloidal minerals.



Anodization of Aluminium using a fast two-step process

Murugaiya Sridar Ilango, Amruta Mutalikdesai and Sheela K Ramasesha 153-158

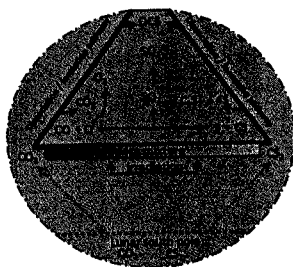
Fast two-step anodization process using oxalic acid and phosphoric acid as electrolytes is reported. Uniform nano-holes were formed on the Al foil with diameter of 180 nm and wall thickness of 130 nm. The nanoporous alumina was characterized using Fe-SEM, UV-Vis spectra, XRD and XPS.



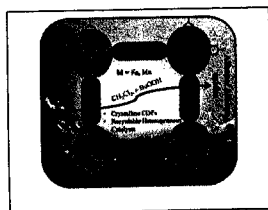
Electron irradiation of carbon dioxide-carbon disulphide ice analog and its implication on the identification of carbon disulphide on Moon

B Sivaraman 159-164

First results from the electron irradiation of carbon dioxide-carbon disulphide ice analog are reported. Molecules such as O₃, CO, CS, C₃S₂, SO₂, OCS and SO₃ were synthesized within the ice matrix. SO₂ abundance in the ice mixture clubbed with the CHACE data confirmed the presence of CS₂ on Lunar South Pole.

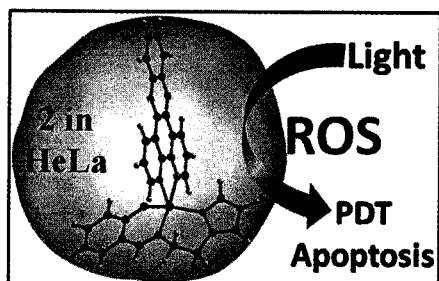


Cover picture: Perylene linked metalloporphyrin catalysts for oxidation reactions. For details, see the paper by Manoj Kumar Singh and Deb Kumar Bandyopadhyay (pp. 1-8)



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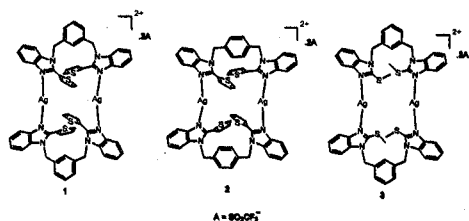
Regular Articles



Photocytotoxic ternary copper(II) complexes of histamine Schiff base and pyridyl ligands

Samya Banerjee, Akanksha Dixit, K Sessa Maheswaramma, Basudev Maity, Sanjoy Mukherjee, Arun Kumar, Anjali A Karande and Akhil R Chakravarty 165–175

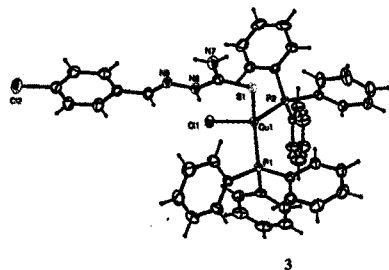
Schiff base copper(II) complex of dipyridophenazine shows remarkable photocytotoxic effect in HeLa cells in visible light (400-700 nm) with reduced dark toxicity via apoptotic pathway. The complex intercalatively binds to ct-DNA, exhibits moderate chemical nuclease activity but excellent DNA photocleavage activity in red light of 705 nm forming $\cdot\text{OH}$ radicals.



Silver(I) based dinuclear metallacycles with free thiophenyl/thiomethyl units

Sarita Yadav, Deepak Gupta and Malaichamy Sathiyendiran 177–184

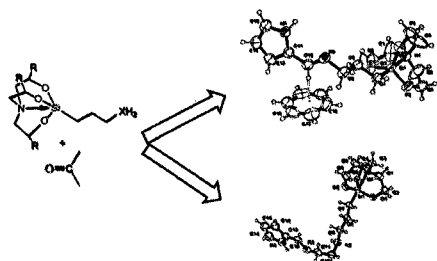
A new type of silver metallacycles with covalently attached free thiophenyl/thiomethyl units was synthesized using $\text{AgOS}(\text{O})_2\text{CF}_3$ and ditopic ligands and characterized by using crystallographic and spectroscopic techniques.



Synthesis and crystal structure of [chlorobis(triphenylphosphino) (p-chlorobenzaldehyde thiosemicarbazone)] copper(I) complex

Ashiq Khan, Poonam Sharma, Rajnikant, Vivek K Gupta, Naresh Padha and Rekha Sharma 185–191

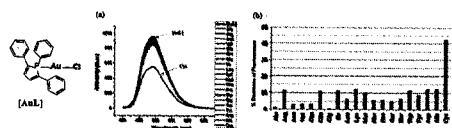
p-Chlorobenzaldehyde thiosemicarbazone formed tetrahedral monomeric complex 3 with copper(I) chloride in the presence of triphenylphosphine. The intermolecular H-bonding, $\text{Cl} \cdots \text{HC}_{\text{ph}}$, 2.733 Å and π interactions, $\{\text{CH}_{\text{ph}} \cdots \pi$, 2.796; 2.776 Å} in this complex led to the formation of 1D chain.



Schiff base functionalized Organopropylsilatranes: Synthesis and structural characterization

Gurjaspreet Singh, Promila, Amandeep Saroa, Jandeep Singh, Raj Pal Sharma and V Ferretti 193–200

Synthesis of Schiff bases linked to organopropylsilatranes was performed by condensation reaction of post-functionalized silatranes with two different aldehydes viz. pyrrole-2-carboxaldehyde and 2-hydroxy-1-naphthaldehyde. The resulting Schiff base substituted silatranes were well characterized by elemental analysis, spectroscopic studies (IR, ^1H , ^{13}C) NMR, MS and by single crystal X-ray diffraction analysis).



Chloro(triphenylphosphole)gold(I) - A selective Chemosensor for Cysteine

Maruthai Kumaravel and Maravanji S Balakrishna 201–206

Photophysical studies of luminescent gold complex of triphenylphosphole have been described.