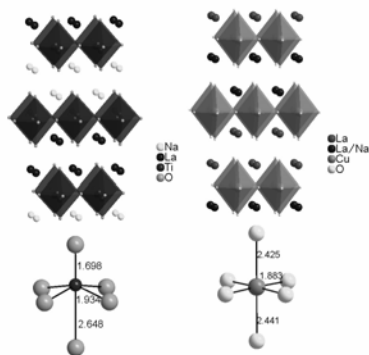


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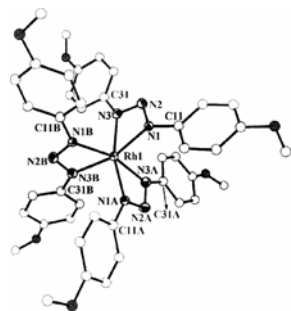


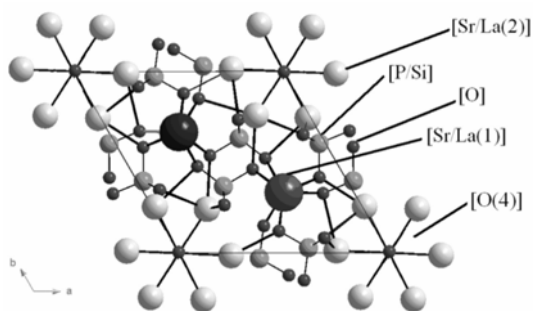
Quest for new materials: Inorganic chemistry plays a crucial role

J Gopalakrishnan and Rohini Mani 235–256

Chemistry – inorganic chemistry in particular – plays a crucial role in the endless quest for new materials to meet the demands of advancing technology. We show in this article how some of the fundamental concepts of inorganic chemistry such as acidity/basicity, oxidation/reduction, crystal field theory, mixed valence and electron transfer, Jahn–Teller distortion and so on find application in this quest.

Full Papers

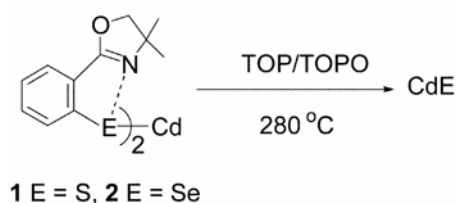




Structural and spectroscopic investigation of lanthanum-substituted strontium-oxbritholites

K Boughzala, S Nasr, E Ben Salem, F Kooli and
K Bouzouita 283–291

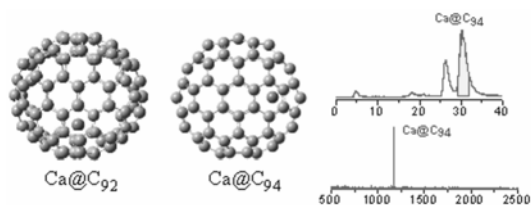
The refinement of powder XRD patterns of the lanthanum-substituted strontium-oxbritholites by the Rietveld method, showed that the lanthanum occupied preferentially the (6h) sites, i.e. M(2) sites into the apatite structure. After inserting La^{3+} and SiO_4^{4-} into the oxyapatite framework, the oxygen O(4) shifted regularly towards the centre of the triangle formed by M(2)-atoms.



Synthesis and characterization of CdS and CdSe nanoparticles prepared from novel intramolecularly stabilized single-source precursors

Karupphasamy Kandasamy, Harkesh B Singh and
Shailendra K Kulshreshtha 293–296

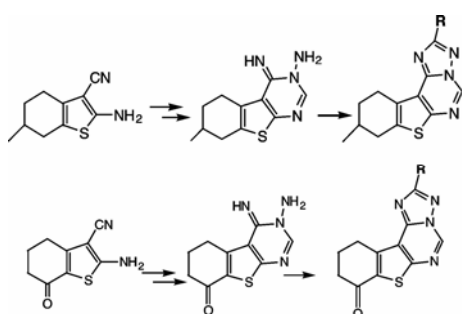
Synthesis and characterization of cadmium sulphide and selenide nanoparticles from the corresponding novel intramolecularly stabilized cadmium chalcogenolates incorporating 2-(4,4-dimethyl-2-oxazoliny) benzene is reported.



Isolation and characterization of higher metallofullerenes $\text{Ca}@\text{C}_{92}$ and $\text{Ca}@\text{C}_{94}$

Yuliang Che, Hua Yang, Hongxiao Jin, Chunxin Lu and
Ziyang Liu 297–300

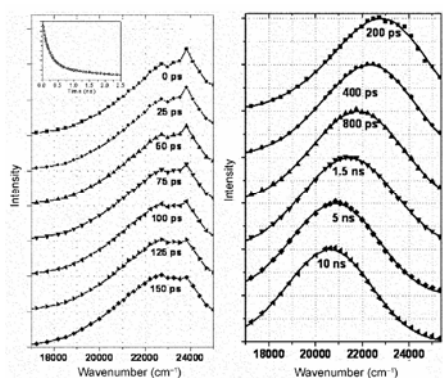
Ca-containing metallofullerenes $\text{Ca}@\text{C}_{92}$ and $\text{Ca}@\text{C}_{94}$ are synthesized from direct current arc discharge method and isolated by multi-stage high-performance liquid chromatography technique without recycling equipment.



Synthesis and antimicrobial activity of some novel thienopyrimidines and triazolothienopyrimidines

Nitinkumar S Shetty, Ravi S Lamani and
Imtiyaz Ahmed M Khazi 301–307

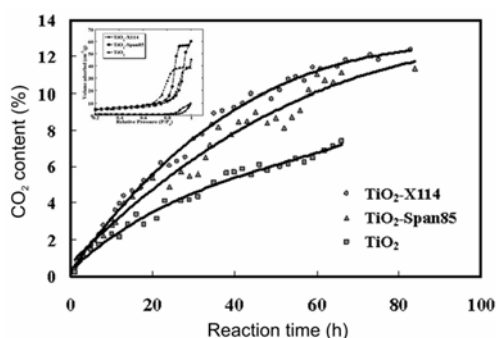
Novel tricyclic thienopyrimidines and triazole fused tetracyclic thienopyrimidines were synthesized from precursors 2-amino-6-methyl-4,5,6,7-tetrahydro-1-benzothiophene-3-carbonitrile and 2-amino-7-oxo-4,5,6,7-tetrahydro-1-benzothiophene-3-carbonitrile respectively. The corresponding precursors were prepared by employing the Gewald reaction. All the compounds have displayed promising antibacterial and antifungal activities.



Excited state dynamics of 9,9'-bianthryl in room temperature ionic liquids as revealed by picosecond time-resolved fluorescence study

Dinesh Chandra Khara, Aniruddha Paul, Kotni Santhosh and Anunay Samanta 309–315

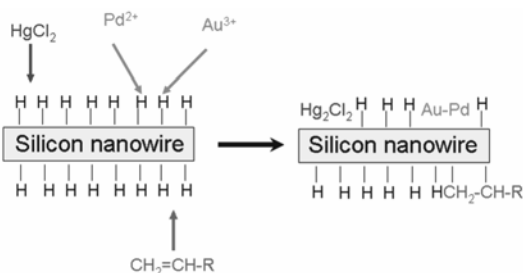
Early-time fluorescence spectra of 9,9'-bianthryl in ionic liquids show that the locally excited (LE) to charge transfer (CT) state relaxation times of the molecule vary between 230 and 390 ps. The results confirm that while in conventional less viscous solvents CT formation kinetics of bianthryl occurs simultaneously with the solvation dynamics, the two processes mostly occur in different time scales in ionic liquids.



The study of the relationship between pore structure and photocatalysis of mesoporous TiO₂

Bing Guo, Hangyan Shen, Kangying Shu, Yaowu Zeng and Wensheng Ning 317–321

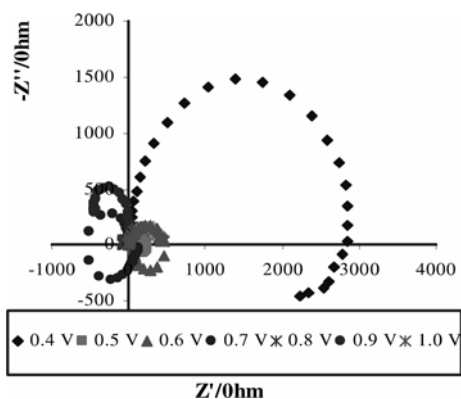
Mesoporous titania was synthesized by a sol-gel method. Two kinds of channels, straight channels made of cylindrical capillaries and curved channels made of slit-shaped pores, exist in the bulk materials. The sample with higher porosity, better textural properties and straight channels are good for photocatalytic performance.



Surface functionalization of HF-treated silicon nanowires

Ming-Wang Shao, Hong Wang, Yan Fu, Jun Hua and Dorothy-Duo-Duo Ma 323–327

Functionalization of hydrogen-terminated surface of silicon nanowires was conducted, which included coupling reaction with acrylate, reductive deposition with HgCl₂, and co-reduction of AuCl₃ and PdCl₂.



Temperature dependence studies on the electro-oxidation of aliphatic alcohols with modified platinum electrodes

Panadda Katikawong, Tanakorn Ratana and Waret Veerasai 329–337

We present here the temperature dependence on the electro-oxidation of aliphatic alcohols including; methanol, ethanol, 1-propanol on the well-defined Pt-based electrodes. Cyclic voltammetry (CV) was used to provide kinetic data while electrochemical impedance spectroscopy (EIS) was used to distinguish different elementary steps of the reaction process at desired bias potentials.

