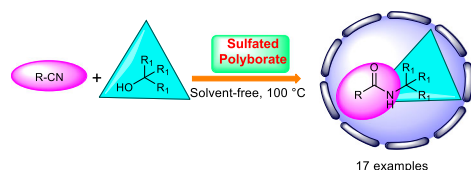


## CONTENTS

### Rapid Communication

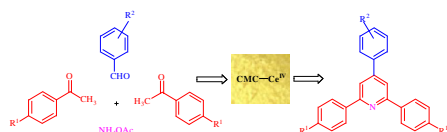


#### Sulfated polyborate: A mild, efficient catalyst for synthesis of *N-tert-butyl*/*N-trityl* protected amides *via* Ritter reaction

Krishna S Indalkar, Chetan K Khatri  
and Ganesh U Chaturbhuj . . . . . 415–420

An efficient, eco-friendly, inexpensive and recyclable sulfated polyborate catalyst was used for the preparation of *N-tert-butyl*/*N-trityl* protected amides *via* Ritter reaction of various nitriles with tertiary alcohols. The key advantages of the present method are short reaction times, high yields, easy workup, recyclability of the catalyst and ability to tolerate a variety of functional groups which give economical as well as ecological rewards.

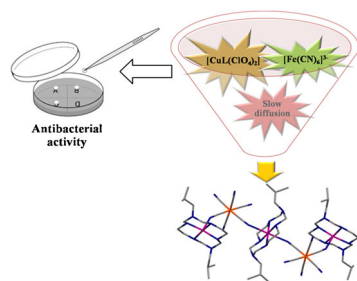
### Regular Articles



#### Cerium(IV) carboxymethylcellulose (CMC–Ce<sup>IV</sup>) as an efficient and reusable catalyst for the one-pot pseudo-four component synthesis of 2,4,6-triphenylpyridines

Yang Chen, Tianzhu Zhang, Dongyang Wang, Junbin Zhou,  
Yizong Zhang and Yiqun Li . . . . . 421–430

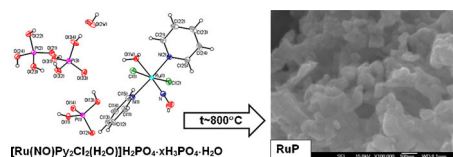
CMC–Ce<sup>IV</sup> was synthesized *via* a simple ion exchange reaction of sodium carboxymethylcellulose (CMC–Na) and ceric ammonium nitrate. The as-prepared CMC–Ce<sup>IV</sup> can efficiently catalyze the one-step pseudo-four-component condensation of various benzaldehydes, acetophenones and ammonium acetate for the synthesis of 2,4,6-triarylpyridine derivatives.



#### Copper(II) complex as a precursor for formation of cyano-bridged pentanuclear Fe<sup>III</sup>-Cu<sup>II</sup> bimetallic assembly: Synthesis, characterization, crystal structure and antibacterial activity

Surachai Kongchoo, Kittipong Chainok, Anob Kantacha  
and Sumpun Wongnawa . . . . . 431–440

A copper mononuclear complex was synthesized, characterized with various techniques, and used as a precursor to synthesize a pentanuclear (Fe<sup>III</sup>-Cu<sup>II</sup>) complex. The Xray structure of the new pentanuclear complex is reported. The precursor copper complex exhibited moderate antibacterial activity.



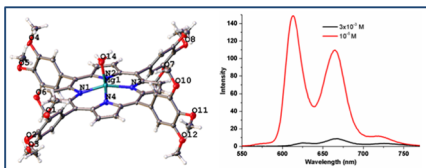
#### Synthesis, thermal properties and photoisomerization of *trans*-[Ru(NO)Py<sub>2</sub>Cl<sub>2</sub>(H<sub>2</sub>O)]H<sub>2</sub>PO<sub>4</sub>·H<sub>2</sub>O

Alexander N Makhinya, Ilya V Korolkov, Maxim A Il'in, Iraida A Baidina,  
Pavel E Plusnin, Eugeni A Maximovski, Elizaveta A Beletskaya  
and Nina I Alferova . . . . . 441–448

Synthesis of *trans*-[Ru(NO)Py<sub>2</sub>Cl<sub>2</sub>(H<sub>2</sub>O)]H<sub>2</sub>PO<sub>4</sub>·H<sub>2</sub>O and [Ru(NO)Py<sub>2</sub>Cl<sub>2</sub>(H<sub>2</sub>O)]H<sub>2</sub>PO<sub>4</sub>·2H<sub>3</sub>PO<sub>4</sub>·H<sub>2</sub>O starting from *trans*-[Ru(NO)Py<sub>2</sub>Cl<sub>2</sub>(OH)] in nearly quantitative yields is reported. Preliminary photoisomerization experiments for *trans*-[Ru(NO)Py<sub>2</sub>Cl<sub>2</sub>(OH)] and *trans*-[Ru(NO)Py<sub>2</sub>Cl<sub>2</sub>(H<sub>2</sub>O)]H<sub>2</sub>PO<sub>4</sub>·H<sub>2</sub>O complexes have been performed, and metastable states have been detected. Heating of phosphate salts of ruthenium pyridine complexes, as synthesized, afford a mixture of nanoscale ruthenium phosphides.

### Magnesium Trimethoxyphenylporphyrin Chain Controls Energy Dissipation in the presence of Cholesterol

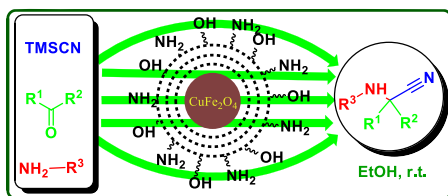
Karishma Devi Borah, N Ghanashyam Singh and Jagannath Bhuyan . . . . . 449–455



A magnesium porphyrin compound,  $[\text{Mg}(\text{TMPP})(\text{H}_2\text{O})].(\text{CH}_3\text{COCH}_3)_2\text{H}_2\text{O}$  **1** (TMPP = 5,10,15,20-tetrakis(3,4,5-trimethoxyphenyl)porphyrin) was synthesized and structurally characterized using single crystal X-ray diffraction and other spectroscopic analysis. The luminescence properties of compound **1** were studied at different concentrations. At higher concentration ( $3 \times 10^{-3}$  M), treatment of compound **1** with cholesterol enhanced fluorescence demonstrating the role of lipid in controlling porphyrin-porphyrin interaction for tuning the bulk photo-physical properties.

### Preparation and application of a magnetic organic-inorganic hybrid nanocatalyst for the synthesis of $\alpha$ -aminonitriles

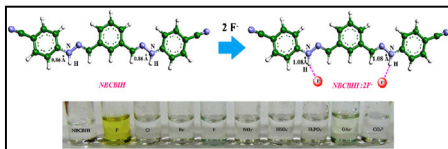
Ali Maleki, Razieh Firouzi Haji, Mina Ghassemi and Hossein Ghafuri . . . . . 457–462



A facile and highly efficient synthesis of  $\alpha$ -aminonitriles is reported *via* a one-pot, three-component condensation reaction of aryl aldehydes, trimethylsilyl cyanide and aniline at room temperature in the presence of  $\text{CuFe}_2\text{O}_4/\text{chitosan}$  as a hybrid nanocatalyst in ethanol as a green solvent.

### A simple hydrazine based molecule for selective detection of Fluoride ion in DMSO

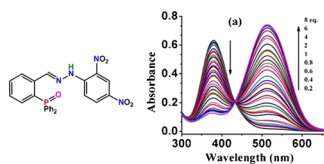
Additi Roy Chowdhury and Priyabrata Banerjee . . . . . 463–470



Hydrazine-functionalized Schiff base chemoreceptor  $[\text{N}^1\text{N}^3\text{-bis}(4\text{-cyanobenzylidene) isophthalaldehyde}]$ , NBCBIH shows efficient selectivity towards detection of  $\text{F}^-$  ion: A combination of experimental and theoretical study is reported.

### Hydrazone derivatives appended to diphenylphosphine oxide as anion sensors

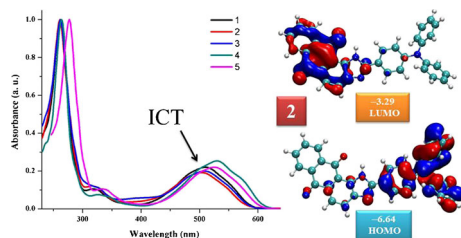
Maruthai Kumaravel, Joel T Mague and Maravanji S Balakrishna . . . . . 471–481



Synthesis of hydrazone derivatives appended to phosphineoxide and anion sensing properties are described.

### Synthesis, Spectral, Electrochemical and Theoretical Investigation of indolo[2,3-*b*]quinoxaline dyes derived from Anthraquinone for *n*-type materials

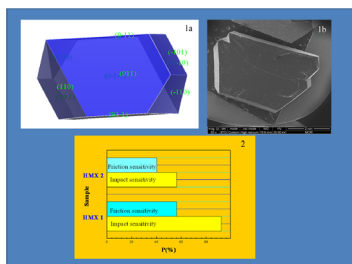
Bharat K Sharma, Azam M Shaikh, Sajeev Chacko and Rajesh M Kamble . . . . . 483–494



A series of five new donor–acceptor based indolo[2,3-*b*]quinoxaline dyes, derived from anthraquinone, have been synthesized, characterized and their optoelectronic properties studied. The donor–acceptor architecture and observed orbital energies were rationalized using DFT calculations. The low lying LUMO energy levels and other results suggest that these molecules have potential to be used as *n*-type materials in organic electronic devices.

### Crystal structure and morphology of $\beta$ -HMX in acetone: A molecular dynamics simulation and experimental study

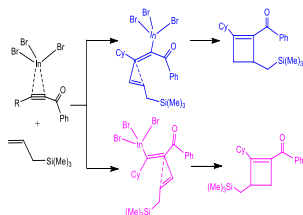
Jun Tao and Xiaofeng Wang . . . . . 495–503



The modified attachment energy (AE) model was used to predict the morphologies of  $\beta$ -Cyclotetramethylene tetranitramine ( $\beta$ -HMX) in vacuum and in acetone, and compared with experimental morphology of HMX recrystallized in acetone. The results showed that the predicted  $\beta$ -HMX morphology (**1a**) agreed qualitatively with the SEM result (**1b**). Recrystallization in acetone can effectively reduce the impact and friction sensitivities of  $\beta$ -HMX.

### DFT study on the mechanism of $\text{InBr}_3$ -catalyzed [2+2] cycloaddition of allyltrimethylsilane with alkynones

Xing Hui Zhang . . . . . 505–513



M06-2X calculation was done to study the reaction mechanism for the [2+2] cycloaddition of allyltrimethylsilane with alkynones by  $\text{InBr}_3$  catalyst. The reaction involves attack of the unsaturated carbon atoms of the alkynone by  $\pi$  electrons and a closed-loop process. The cyclobutenone product of silicon in the 2-position of the ketone group is more favored.



*Cover picture:* Ce(IV) carboxymethylcellulose-catalyzed synthesis of triphenylpyridines. For details, see the paper by Yang Chen *et al.* (pp. 421–430)