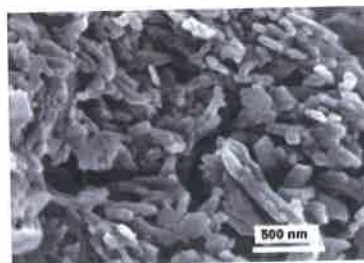


9 **Calcium oxalate crystallization in SDS solutions**

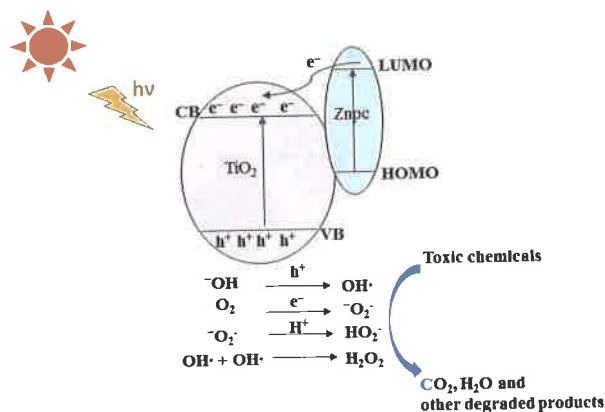
Sodium dodecyl sulfate inhibits CaC_2O_4 crystallization and growth significantly through electrostatic interaction between DS^{2-} and Ca^{2+} , while hydroxy isopropyl chitosan promotes the growth of CaC_2O_4 (020) surface due to adsorption of $-\text{NH}_2$ groups. Both Ca^{2+} and $\text{C}_2\text{O}_4^{2-}$ inhibit the growth of (020) surface remarkably when their concentrations are not the same. Ethanol increasingly inhibits the growth of the (101) and (020) surfaces with increasing $(V_{\text{ethanol}}/V_{\text{TiO}_2})$. Mg^{2+} ions induce formation of spherical COD when the ratios of $\text{Mg}^{2+}/[\text{Ca}^{2+}]$ are 1:4 and 4:1, and cruciate-flowered COD when the ratio is 1:1. The electrostatic interaction between SDS and Ca^{2+} ions and the formed CDS plays a key role in CaC_2O_4 crystallization.



Yan Li, Xifeng Lu, Xiaodeng Yang* & Yulin Wang^c

18 **Enhanced photocatalytic activity of mesoporous nano titania decorated with zinc phthalocyanine**

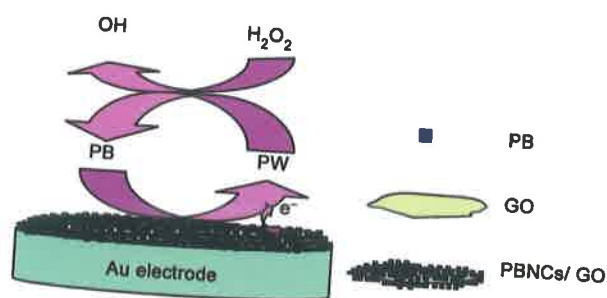
Zinc phthalocyanine decorated mesoporous titania (Znpc-TiO_2) with a specific surface area of $247 \text{ m}^2 \text{ g}^{-1}$ has been synthesized by a hydrothermal method. This visible light active nanocatalyst degrades sulfur mustard, a highly toxic chemical warfare agent, as well as malchite green dye, photocatalytically to nontoxic intermediates and finally into SO_2 , CO_2 and H_2O . Znpc-TiO_2 requires an exposure time of as low as 60 min, while with undoped TiO_2 almost six times (360 min) longer irradiation time is required.



P V R K Ramacharyulu* & G K Prasad*

26 ***In situ* synthesis and characterization of Prussian blue nanocubes on graphene oxide and its application for H₂O₂ reduction**

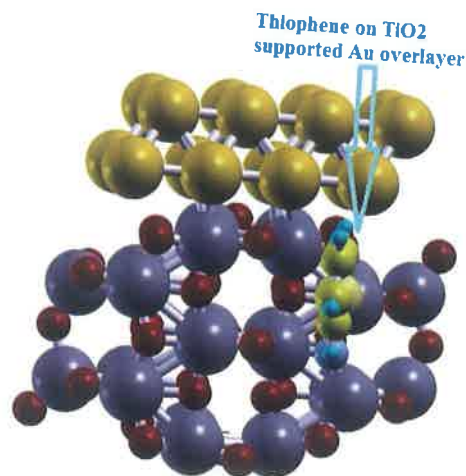
An effective and facile *in situ* electroless deposition approach has been developed for growing high-quality Prussian blue nanocubes on the surface of graphene oxide (PBNCs/GO) in a controlled manner. The coverage and loading of PB NPs on the surface of GO nanosheets can be tuned by control over the experimental parameters. It exhibits prominent electrocatalytic activity towards reduction of hydrogen peroxide, with a linear calibration in the range of 0.002–2.8 mM and a detection limit of 0.48 μ M. The response is within less than 5 s, while the detection sensitivity is 2502 μ A mM⁻¹cm⁻².



Cheng-xiang Ge, Peng-jun Li, Juan-hua Lai & Ping Qiu*

34 **A highly specific heterostructure composed of N-doped TiO₂ anatase nanoparticles and double layer Au for detection of thiophene molecule: A DFT study**

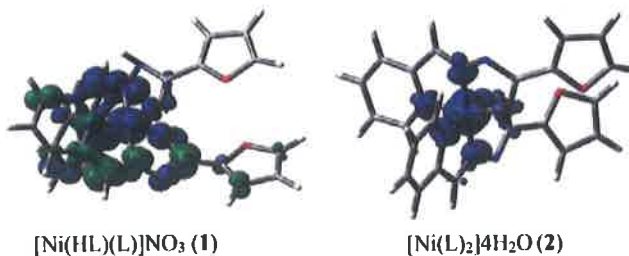
Adsorption of thiophene molecule on pristine, N-doped and Cu/N codoped TiO₂-supported Au overlayers has been studied by DFT calculations, taking into consideration the effects of van der Waals interactions. Thiophene interacts with TiO₂ supported Au overlayer by its active sulfur atom, providing a double contact point at the interface region. Thiophene molecule can be adsorbed on both the Au as well as five-fold coordinated titanium sites of TiO₂ supported Au overlayers. Adsorption of thiophene molecule on the N-doped TiO₂ supported Au overlayers is energetically more favorable than adsorption on the undoped systems.



Amirali Abbasi* & Jaber Jahanbin Sardroodi

- 44 **Crystal structure, configurational and DFT study of nickel(II) complexes with N₂O-donor type Schiff base ligand**

Nickel(II) complexes [Ni(HL)(L)]NO₃ (1) and [Ni(L)₂]4H₂O (2) have been synthesized and characterized via single crystal X-ray structural analysis. Supramolecular architecture in both (1) and (2) is shown by CH...π and π...π interactions. The molecular structures and spectral properties of the complexes have been explained by DFT and TD-DFT calculations.

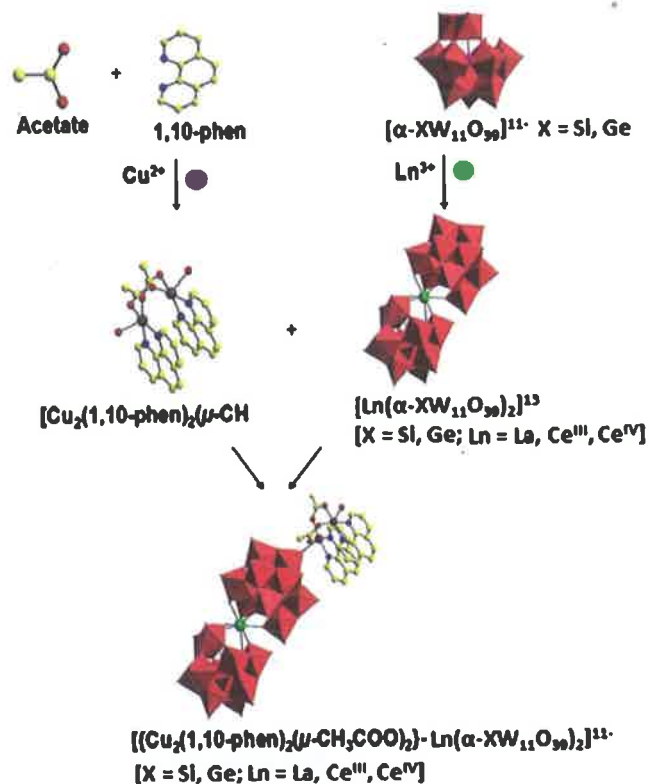


Yogendra Pratap Singh, Ram N Patel* & Yogendra Singh

Notes

- 52 **Early lanthanoid substituted organic-inorganic hybrids of silico- and germane-tungstates: Syntheses, crystal structures and solid properties**

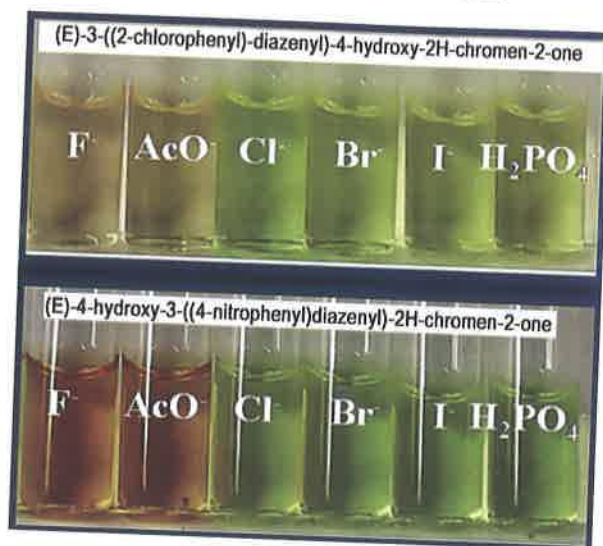
Alkali salts of organic-inorganic hybrid 3d-4f heterometallic germanotungstates, viz., [Cu₂(1,10-phen)₂(μ-CH₃COO)₂]Ln(α-MW₁₁O₃₉)₂]¹¹⁻ [M = Si^{IV}, Ge^{IV}, Ln = La^{III}, Ce^{III}, Ce^{IV}, La^{III}, Ce^{III}, Ce^{IV} have been prepared under mild reaction conditions. All the compounds are well characterized with SC-XRD, FT-IR spectroscopy, powder-XRD, liquid UV/vis, elemental and thermogravimetric analysis. All the compounds form polymeric chain assistance with copper organic complexes.



Rakesh Gupta, Swati Parbhakar, Imran Khan, Jogendra Nath Behera & Firasat Hussain*

59 Coumarin based azo dyes as anion sensors:
A spectrophotometric study

Two 4-hydroxy coumarin based azo dyes, viz., (*E*)-3-((2-chlorophenyl)-diazonyl)-4-hydroxy-2*H*-chromen-2-one and (*E*)-4-hydroxy-3-((4-nitrophenyl)diazonyl)-2*H*-chromen-2-one have been synthesized and their anion detection ability has been studied for selective detection of fluoride and acetate ions through the naked eye. On addition of 4 equivalents of fluoride or acetate to the CH₃CN solution of the receptors, the colour changes from light yellow to light red, while addition of other anions does not show any significant change in colour under identical experimental conditions. In fluorescence studies, both the receptors show quenching in the presence of fluoride and acetate ions.



Nilanjan Chakraborty, Sutanwi Bhuiya,
Arijit Chakraborty* & Suman Das*

67 Guide to Authors

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