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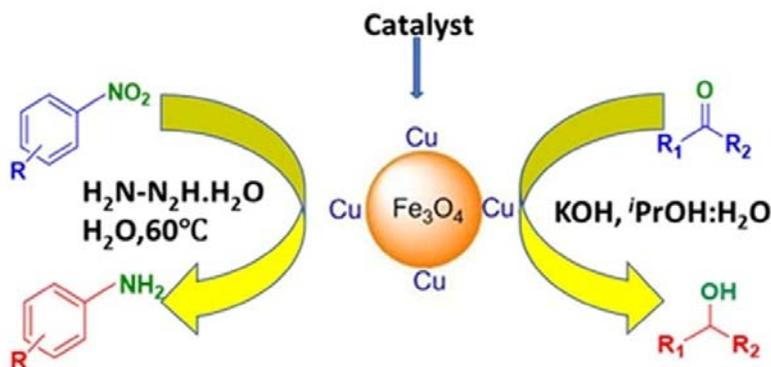
January 2021

CONTENTS

Papers

- 10 **Versatility of magnetic Fe₃O₄ supported copper nanocomposite catalyst towards reduction of carbonyl and nitro compound**

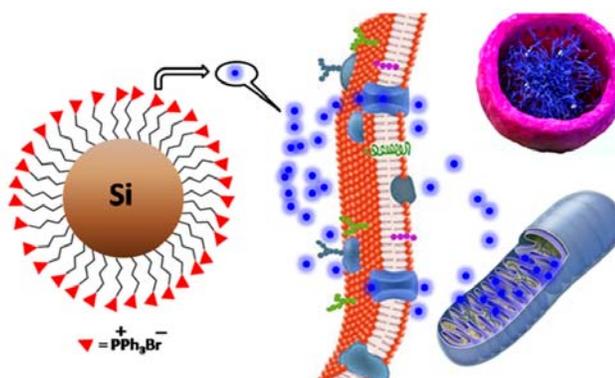
Magnetic Ferrite supported copper nanocomposite catalyst has been synthesized and characterized. This nanocomposite is found to be more efficient and versatile towards carbonyl and nitro reduction under mild reaction condition with very good yield and turn over number.



Nibedita Gogoi*, Chimi Rekha Gogoi, Pradip K Gogoi* & Geetika Borah

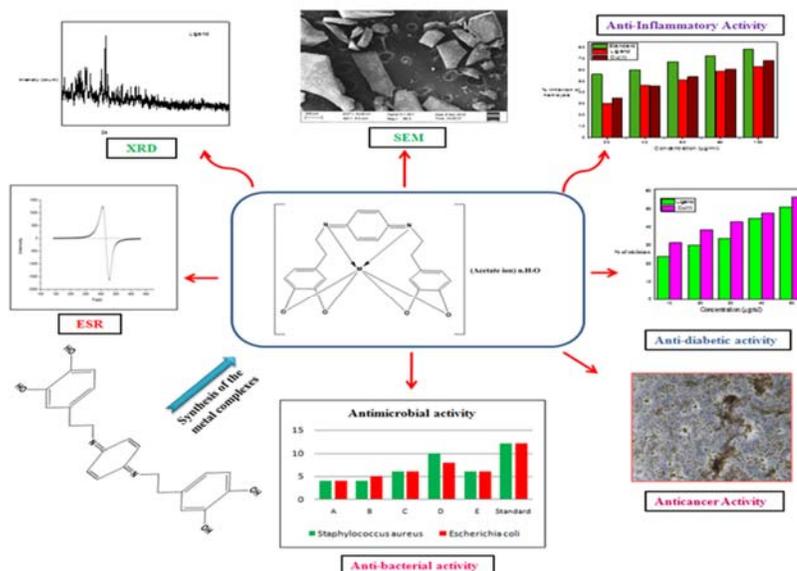
- 19 **Synthesis and characterization of a new water-soluble non-cytotoxic mito-tracker capped silicon quantum dot**

A water-soluble allyl triphenylphosphoniumbromide based mito-tracker capped silicon quantum dot (Mito-SiQDs) has been synthesized and used as a possible fluorescent marker to visualize mitochondrial subcellular compartment in living cell through fluorescence imaging study.



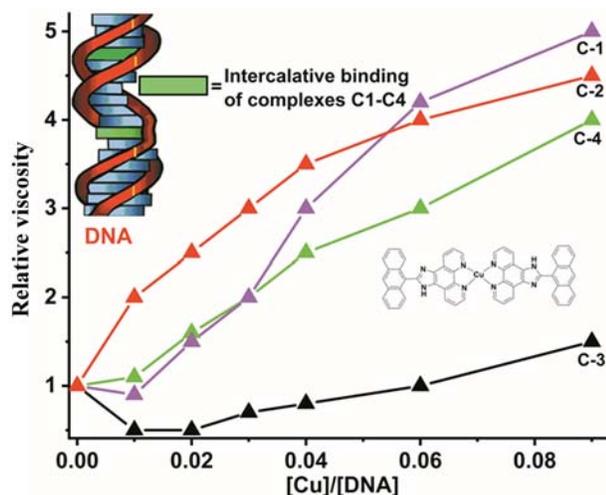
Subrata Kumar Saha, Swadhin Kumar Saha, Koushik Dhara, Pabitra Chattopadhyay & Arnab Sarkar*

- 26 **Synthesis, characterization and biological studies on Co(II), Ni(II), Cu(II) and Zn(II) complexes derived from 4-(2-amino ethyl) benzene-1,2-diol and 1,4 benzoquinone** Co(II), Ni(II), Cu(II) and Zn(II) complexes have been synthesized using a novel Schiff base ligand derived from 4-(2-amino ethyl) benzene-1,2-diol and 1,4-benzoquinone. Cu(II) complexes has shown better antibacterial and antifungal activity than the other complexes.



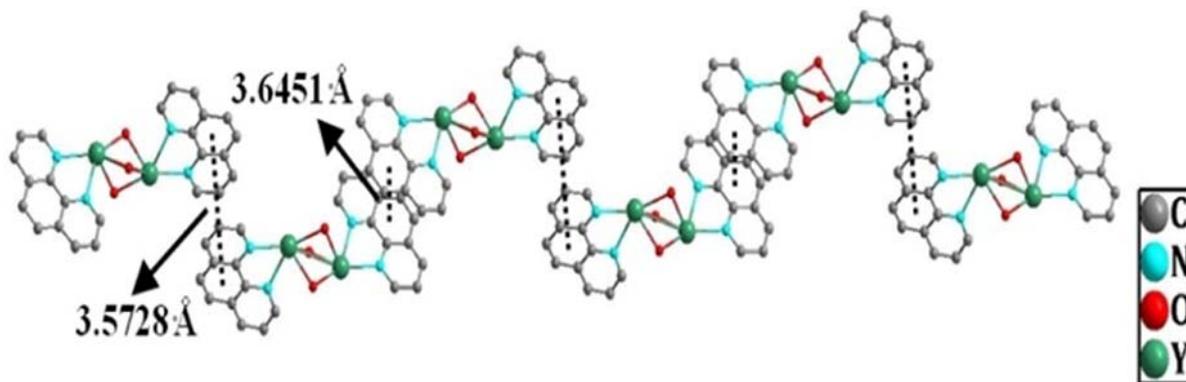
Thulasimani Gomathi, Somasundaram Karthik & Subramaniam Vedanayaki*

- 37 **CT-DNA-binding and biological activity of mononuclear copper(II) complexes with imidazo-phenanthroline ligands** Four [Cu(L1-L4)]²⁺ complexes have been synthesized and proved as efficient DNA-binders based on absorption, emission, viscosity and molecular modeling. Experimental results support the intercalative mode of binding with K_b values $\sim 10^4$ between complexes and CT-DNA. These complexes have possessed a significant cytotoxic effect toward cancer cell lines MDA-MB-231, B16-F10, DU-145 and CHO-K1.



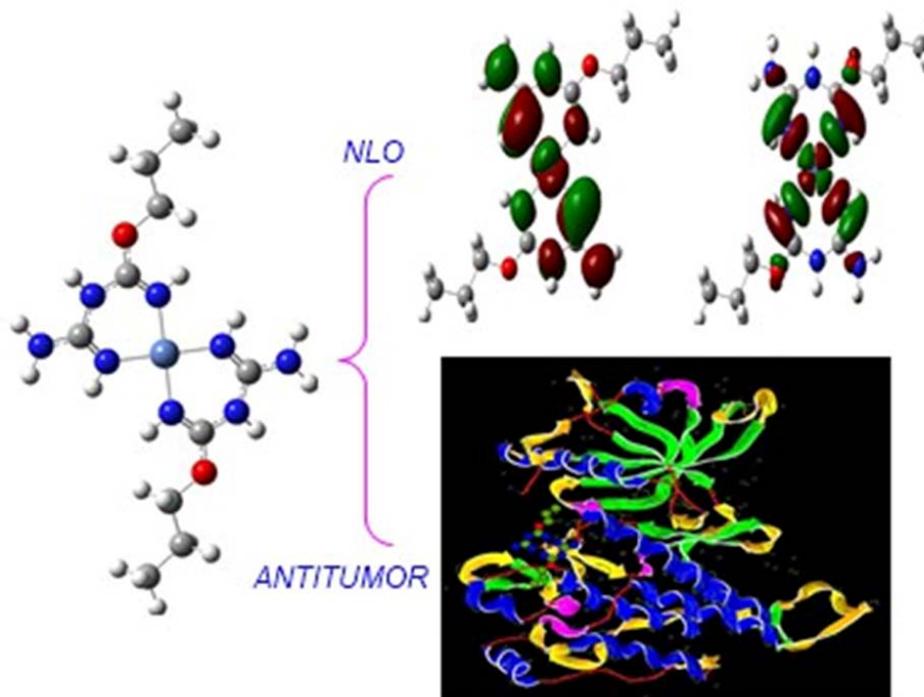
Penumaka Nagababu*, Thulasiram B, Jidnyasa Nagarkar, C Shobha Devi, Perala Sudheer Paul & Thatiparthi Byragi Reddy

- 45 **Synthesis, crystal structure and properties of a yttrium complex based on mixed functional ligands** The dinuclear structural units are cross-linked through the offset face-to-face π - π stacking interactions between neighboring phen molecules, thus a one-dimensional chain supramolecular structure is formed.



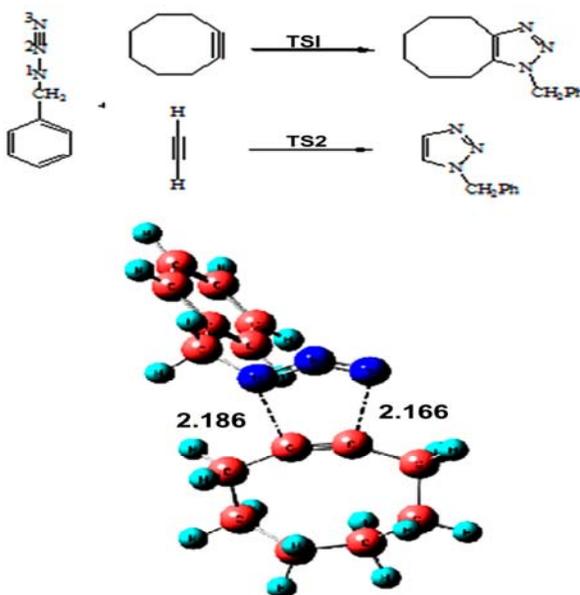
Hongzhe Jin, Xiaoming Peng, Lei Guan*, Ying Wang & Xuejia Xiong

- 51 **Computational structure characterization, nonlinear optical properties and antitumor activities of Nickel(II) complexes containing alkoxy-derived dicyandiamide ligands** $[\text{Ni}(\text{dcda-O-Me})_2]^{2+}$ (1), $[\text{Ni}(\text{dcda-O-Et})_2]^{2+}$ (2), $[\text{Ni}(\text{dcda-O-nPr})_2]^{2+}$ (3), and $[\text{Ni}(\text{dcda-O-nBu})_2]^{2+}$ (4) complexes (dcda-O-R is dicyandiamide ligands with alkoxy-derived) have been optimized in the gas phase at B3LYP/LANL2DZ/6-31+G(d,p) level. Computational structure characterization has been performed from the structural parameters, IR spectra, $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ chemical shift values. Molecular docking results, show that the complex 3 has the highest antitumor activity against the selected target protein.



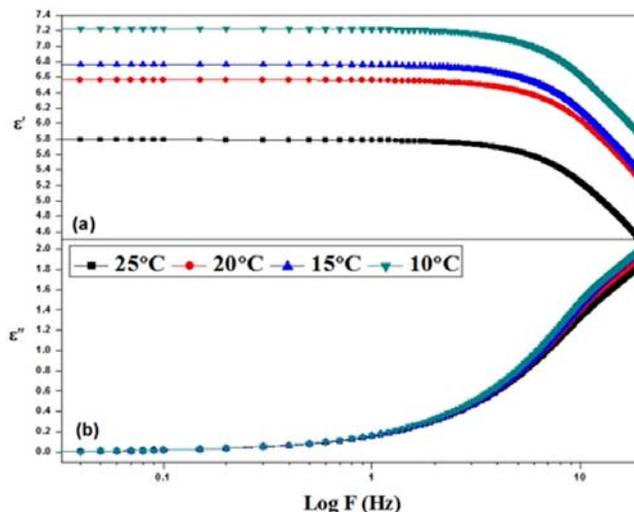
Tuba Alagöz Sayın & Duran Karakaş*

- 62 **A molecular electron density theory study to understand the strain promoted [3+2] cycloaddition reaction of benzyl azide and cyclooctyne** [3+2] cycloaddition reaction of benzyl azide with cyclooctyne is accelerated relative to that with acetylene due to the lower energy cost for the depopulation of the alkyne moiety to generate *pseudoradical* centers for the formation of new single bonds.



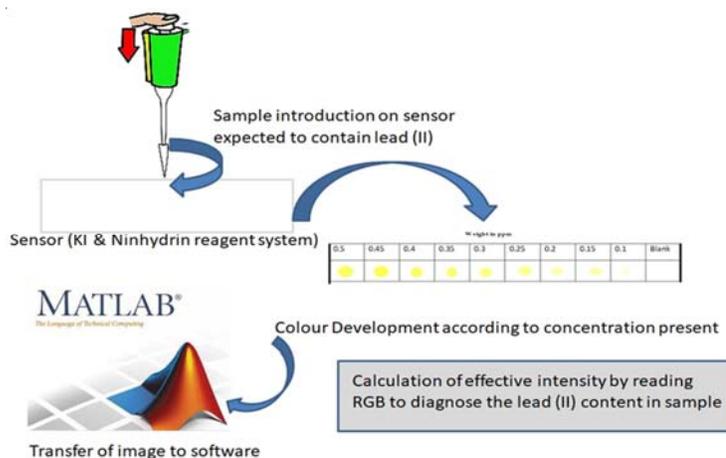
Nivedita Acharjee* & Sourav Mondal

- 72 **Molecular interaction studies of isopropyl acetate-xylene mixture using dielectric relaxation approach** Dielectric relaxation parameters of Isopropyl acetate (IPA)-xylene mixtures with different concentrations and temperatures have been measured in the frequency range of 10 MHz to 30 GHz using time domain reflectometry technique. The experimental values of dielectric constant obtained from time domain reflectometry are in well agreement with theoretical values of dielectric constant obtained by Luzar model. Positive values of enthalpy and entropy indicating that the system is endothermic and less ordered while Gibbs free energy decreases with increase of IPA in xylene.



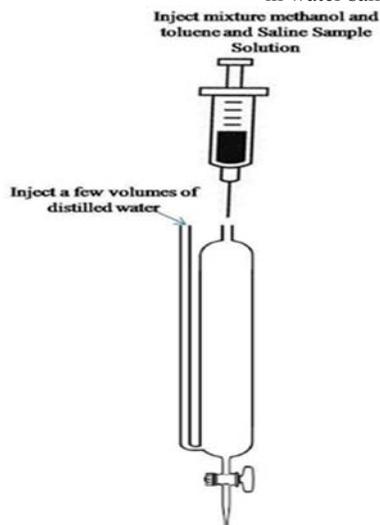
S S Birajdar, A R Deshmukh, D B Suryawanshi & A C Kumbharkhane*

- 80 **An improved simple, robust, cheap and potential diagnostic device for Lead(II)** A paper-based sensor for detection and quantitative determination of Lead by immobilization of potassium iodide and ninhydrin over paper platform is reported. Using MATLAB software, the effective intensities are calculated mathematically. The developed sensor determines the contamination of lead up to 0.01 ppm.



R D Sharma*, P Chouksey & S Amlathe

- 86 **Homogeneous liquid-liquid microextraction via flotation assistance for determination of trace amounts of manganese prior to inductively coupled plasma-mass spectrometry** In the present study, for the first time, homogeneous liquid-liquid microextraction via flotation assistance method is described for pre-concentration of trace amounts of Mn (II) in water samples.



Mohammad Rezaee^{a,*}, Faezeh Khalilian^b, Alireza Dehgan^b & Parisa Tajer-Mohammad-Ghazvini^a

Authors for correspondence are indicated by (*)