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Authors: Amit Kumar Manna, Jahangir Mondal, Kalyani Rout, Goutam K. Patra



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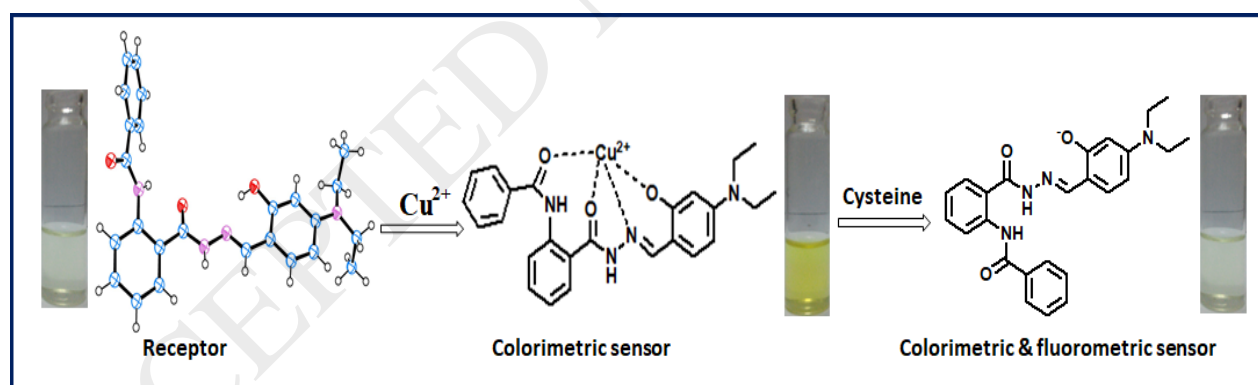
Amit Kumar Manna, Jahangir Mondal, Kalyani Rout and Goutam K. Patra*

Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G), India.

*Corresponding Author: Tel.: 91 7587312992, E-mail: patra29in@yahoo.co.in

Graphical abstract

A novel simple reversible Schiff base chemosensor (E)-N'-(4-(diethylamino)-2-hydroxybenzylidene)-2-(benzamido)benzohydrazide (**L**) has been designed, synthesised and characterised by X-ray single crystal analysis, ^1H -NMR, IR spectroscopy, ESI-MS spectrometry and elemental analyses. The receptor **L** is successfully applied for sequential detection of Cu^{2+} ions colorimetrically and cysteine by both colorimetrically and fluorometrically in aqueous medium. The detection limit reaches up to 9.3×10^{-7} M and 5.86×10^{-6} M respectively, which were far lower than those recommended by the WHO guidelines for drinking water. The synthesized chemosensor (**L**) finds application in real sample analysis and formation INHIBIT and IMPLICATION logical devices.



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