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Exfoliated Graphitic Carbon Dots: Application in Heavy Metal Ion Sensing

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Abstract

Highly Exfoliated Graphitic Carbon dot (HEG carbon dot) is reported herein, exploiting commercially available table sugar (sucrose) as the green precursor. An amorphous carbon matrix made of 7-8 graphenic units constitutes the HEG carbon dot core. This system exhibits excitation energy transfer with the Xanthene dye, Rhodamine-B, which is expressed as a noticeable enhancement in the luminescence of the dye. Metal ion assisted hindrance in FRET is noticed in presence of Hg (II) ion, which paves way to the fabrication of an efficient Hg (II) ion sensing tool. The system exhibits high selectivity and sensitivity with Limit of Detection 98 pM.

Keywords

Highly Exfoliated Graphitic Carbon dots; Hg (II) sensing; Excitation energy transfer

INTRODUCTION

Carbon nano dots, tiny spherical carbon particles of size less than 10 nm, are the fascinating materials in the carbon nano world, and research on these luminescent carbon moieties is in full swing globally. Countless number of reports on carbon dots prove amorphous 2D-

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