One-step green approach to synthesis highly fluorescent carbon quantum dots from banana juice for selective detection of copper ions

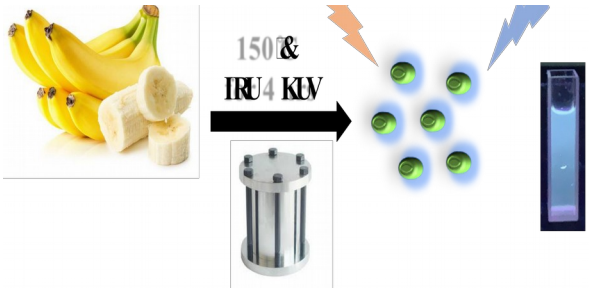
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I. Abstract

Green synthesis of carbon quantum dots (CQDs) from natural sources always remain an attraction due to their excellent optical properties.[1] In present work, highly fluorescent CQDs were synthesized from banana (musa acuminata) juice using a simple one-step hydrothermal process, which does not required any surface passivation, oxidizing agent or inorganic salt [2]. Transmission electron microscopic images and X-ray diffraction analysis revealed spherical shaped CQDs of an average size of 1.27 nm with poor crystallinity. The proposed method offers higher quantum yield (32%) at an excitation wavelength of 330 nm as compared to other reported natural sources-derived CQDs. The synthesized CQDs utilized as a fluorescent probe for detection of Cu (II) in water. The fabricated fluorescent sensor displayed detection of copper ions in the concentration range of 1-800 µg/mL with the LOD of 0.3 µg mL^{-1}.

II. Image:



III. References:

[1] De, Bibekananda, and Niranjan Karak. "A green and facile approach for the synthesis of water soluble fluorescent carbon dots from banana juice." *Rsc Advances* 3.22 (2013): 8286-8290.

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IV. Biography:

Navneet Chaudhary currently pursuing his Ph. D. at School of Biotechnology, Delhi Technological University, Delhi and Special Centre for Nanoscience, Jawaharlal Nehru University. New Delhi. His current area of research is nanomaterial based biosensor for the detection of antibiotics and heavy metals. He is currently working on fabrication of nano-biosensors based on various method such as optical and electrochemical.

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