

Starch (*Tapioca*) to carbon dots: an efficient green approach to *on-off-on* photoluminescence probe for fluoride ion sensing

Aniruddha Basu,^a Anil Suryawanshi,^a Begraj Kumawat,^b Anshu Dandia,^b Debanjan Guin^{*b} and Sathishchandra B Ogale^{*a}

^a Centre of Excellence in Solar Energy, National Chemical Laboratory (CSIR-NCL), Dr. Homi Bhabha Road, Pune, 411008, India. E-mail: sb.ogale@ncl.res.in; sathishogale@gmail.com

^b Department of Chemistry, University of Rajasthan, Jaipur 302004 INDIA. Email: begrajcumawat90@gmail.com, dranshudandia@yahoo.co.in, debanjan.guin@gmail.com

Materials:

All chemicals except hydrochloric acid (HCl) were purchased from Merck chemicals. HCl was purchased from Loba Chemie.

Characterizations:

The as-synthesized C-dots were characterized by different techniques such as FTIR (Bruker Tensor 27), High Resolution Transmission Electron Microscopy (HRTEM, FEI Tecnai 300), UV-Visible spectroscopy (JASCO V-570 spectrophotometer), and photoluminescence (Horibha Scientific Fluoromax-4 Spectrofluorometer).

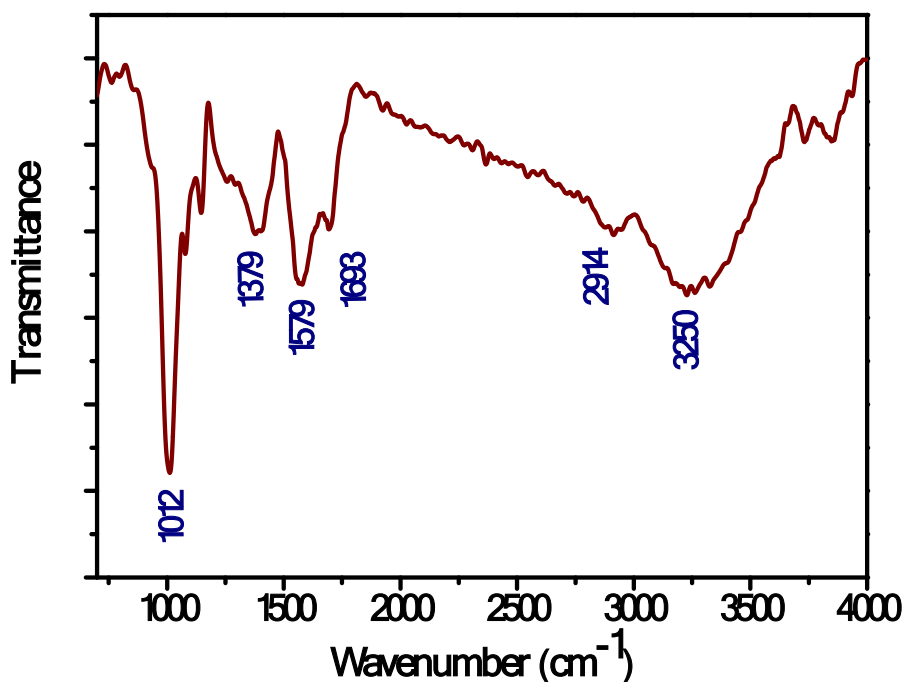


Figure S1, FTIR spectrum of C-dot.

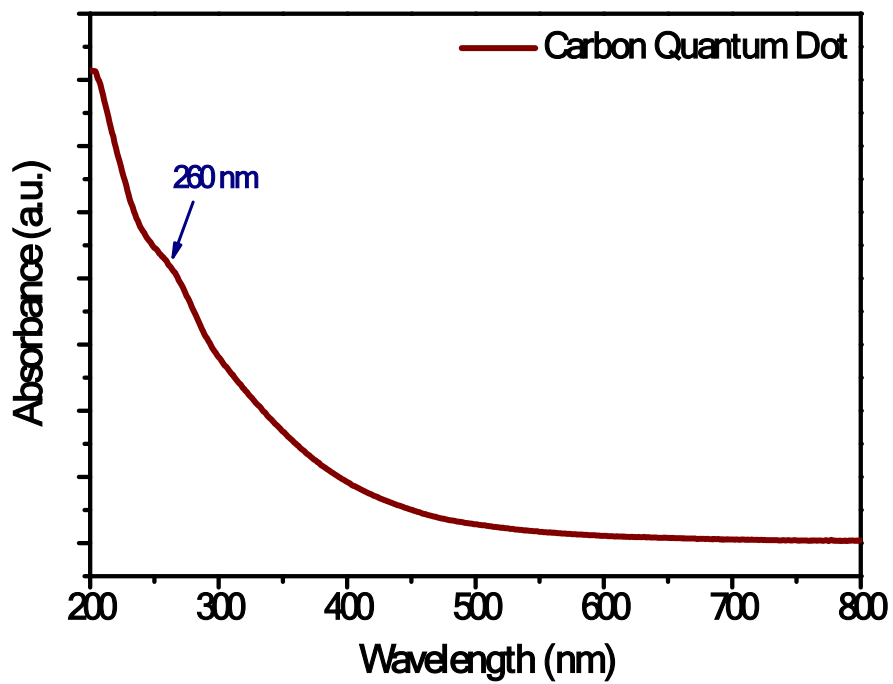


Figure S2. UV-visible spectrum of C-dot.

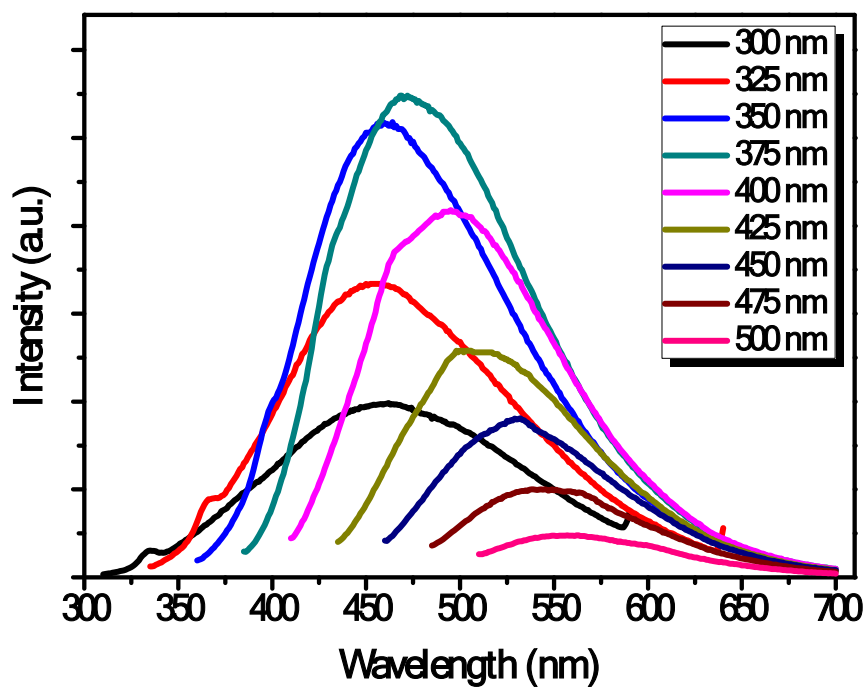


Figure S3. PL data of C-dot at different excitations.

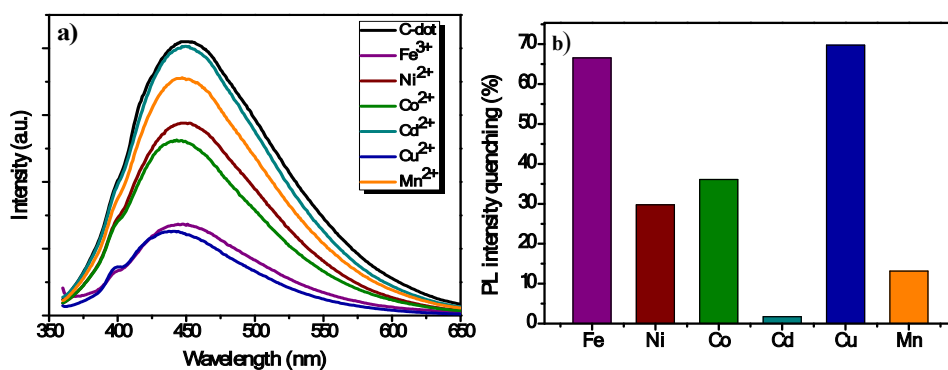


Figure S4. (a) PL intensity quenching of C-dot with different cations. (b) Extent of PL intensity quenching by different cations in percentage.

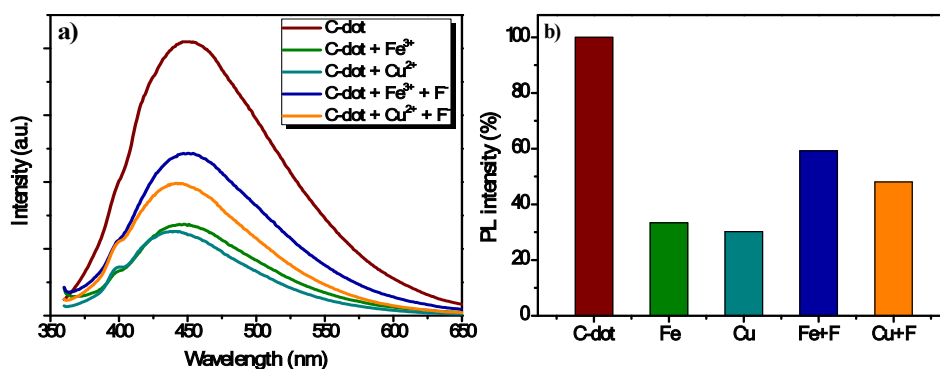


Figure S5. (a) PL intensity quenching of C-dot with Fe³⁺ and Cu²⁺ and subsequent recovery with F⁻ ions. (b) Percentage PL intensity quenching by Fe³⁺ and Cu²⁺ and recovery with F⁻ ions.

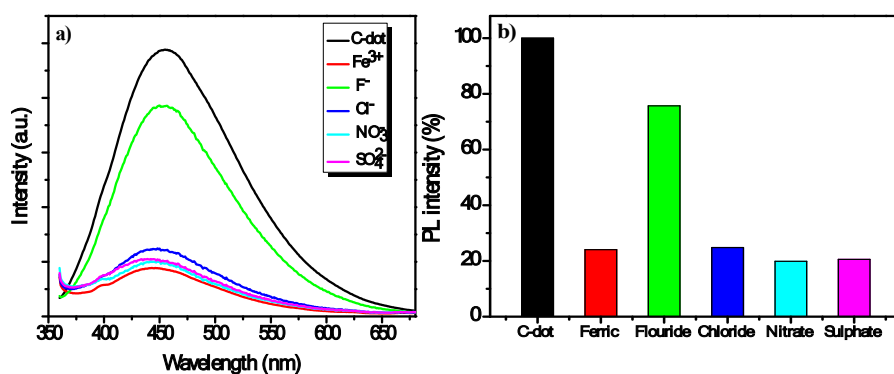


Figure S6. (a) PL recovery with different anions. (b) PL recovery in percentage with different anions.