

# 2<sup>nd</sup> Biomedical Engineering Conference and Expo

November 30-December 01, 2015 San Antonio, USA

## Photo-luminescent carbon quantum dot-layered double hydroxide composites for diagnostic applications

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There is an increased need of materials that can effectively help in the process of cancer diagnosis. Use of luminescent carbon quantum rods in biological investigations has increased dramatically over the past several years due to their unique size-dependent optical properties, low cytotoxicity and good biocompatibility. Photo-luminescent carbon based materials, which act as bio label, can be used as fillers in a polymer/inorganic matrix to synthesize a composite material for required application. Layered double hydroxide (LDH) was used as the matrix material as it easily incorporates the bio markers/labels and helps in decreasing the toxic effect the particles might have. We have synthesized a hybrid material consisting of Layered Double Hydroxide (LDH) as matrix and CQRs as filler. CQRs were synthesized using electrochemical method in which graphite rod electrodes were dipped in a basic solution. LDH, which is a multilayered material, was then formed. To further enhance the properties of LDH, CQR was incorporated in-situ in it by co-precipitation method in which we took 10ml of CQD solution in 60 ml of water and adding Mg and Al salt drop wise maintaining the pH at 11 and then heating at 60 degree for 24 hrs. Then, centrifugation was done and the sediment was dried and characterized for obtaining its properties. The composite prepared were characterized by XRD and TEM techniques. The other techniques used were SEM, FTIR, Raman spectroscopy, cell culture, T to T1 relaxation. Further, tests on cytotoxicity have been performed to test the compatibility with living cells.

### Biography

Namrata Tiwari is currently pursuing an Integrated Dual Degree course that incorporates a B-Tech in Bio-engineering and M-Tech in Bio Medical Technology at the School of Biomedical Engineering, Indian Institute of Technology- Banaras Hindu University [IIT-(BHU)], Varanasi, India. She wishes to apply for the poster presentation owing to her experience and interest. She has worked as a research intern in the Defense Institute of Technology (DRDO), Pune under the supervision of "Dr. H S Panda", Assistant Prof., department of Material Engineering, DIAT, Pune and has contributed in a commendable research work.

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