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IAPME Seminar

Luminescent CDots: Synthesis and Applications

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Abstract: Carbon nanodots (CDs) are the new type of carbon-based luminescent materials with distinct merits for biological and lighting applications due to their low toxic, good biocompatibility, high photostability and facile preparation. Focusing on the main problems in this field, our group proposed a method of controlling the bandgap emissions of CDs through sp^2C domains controlling and surface engineering to achieved full color and NIR emissive CDs, and realized optical pumped green laser from CDs, only using citric acid and urea as precursors. The prepared NIR emissive CDs can act as in vivo fluorescence and thermal theranostics for cancer treatment in living mice by the in vivo photothermal therapy of tumor. Based on "supra-CDs" systems, water-jet luminescent printing and effective NIR photothermal conversion up to 54% were also achieved. Using CDot-based phosphors, full-color and white light emissive CDot-based LEDs are also prepared.

Dr. Song-Nan Qu is a full Professor in State Key Laboratory of Luminescence and Applications at Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences. He achieved his Ph.D. and B.S. from Jilin University in materials physics and chemistry at 2000 and 2009 respectively. His research interests focus on development and applications of luminescent carbon nanodots. Dr. Qu has published 58 papers in international scientific journals, including Adv. Mater., Angew. Chem. Int. Ed., Adv. Funct. Mater. Light: Sci. Appl., Chem. Mater., and Small, with more than 1700 SCI citations.

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