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UNIVERSIDADE DE MACAU  
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應用物理及材料工程研究院  
INSTITUTO DE FÍSICA APLICADA E ENGENHARIA DE MATERIAIS  
INSTITUTE OF APPLIED PHYSICS AND MATERIALS ENGINEERING

# IAPME Seminar

## The Light of Carbon Dots

Prof. Siyu LU

College of Chemistry, Zhengzhou University

Date: 29/12/2022; Time: 14:00 - 15:00; Zoom

(Meeting ID: 961 8522 1357; Password: 010947)

Carbon dots (CDs) are a new type of multifunctional material developed in the past decade. At present, it is mainly prepared from organic small molecules or polymers through processes such as hydrothermal condensation, crosslinking, and carbonization. CDs have the advantages of a simple preparation process, easy surface modification, adjustable emission spectrum, stable performance, good water solubility, and excellent biocompatibility, which promotes their great application potential in many fields such as sensing, bioimaging, medical diagnosis and treatment, energy catalysis, and optoelectronic devices.

The speaker mainly introduced two recent innovative achievements in the direction of CDs:

1. Using the synergy between the hybrid carbon-based inner core and the surface micro-nano structure, the controllable preparation and functional regulation of CDs have been preliminarily realized;
2. Proposed a control strategy for CDs-confined nanocrystals, clarified the chemical mechanism of inhibiting the aggregation of metal nano-catalytic materials, and significantly improved the hydrogen production efficiency of electrolyzed water.



### Introduction of speaker

Prof. Lu is a Professor of the College of Chemistry of Zhengzhou University, Deputy Director of the Institute of Energy Chemistry of Zhengzhou University, and the first young top-notch talent of Zhengzhou University. He is a recipient of the National Outstanding Youth Fund. His research expertise is the properties and preparation of optoelectronic nanocrystals (carbon dots, etc.), and the application of their hybrid systems in display and energy. He has co-authored more than 100 papers in refereed journals, including *Acc. Mater. Res.*, *Angew. Chem.*, *Adv. Mater.*, *Matter*, *Nano Today* (over 13,581 citation times, h-index: 66, Google Scholar, ESI highly cited papers: 49, Web of Science). He presided over a number of national and provincial crucial scientific research projects including the National Natural Science Foundation of China (NSFC). He also served on the editorial board of internationally renowned journals such as *SmartMat* and *Chinese Chemical Letters* and was selected as a Highly Cited Researcher by Clarivate.