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## Graphene quantum dots as new molecular guiding lights for bio-imaging and bio-sensing

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Due to the intrinsic limitations suffered by the current fluorophores (e.g., fluorescent proteins, organic dyes, and semiconductor quantum dots), seeking for better fluorescent reporters which are bright, photostable, biocompatible, molecular sized, and of desired excitation-emission profile is an ongoing and critical effort. The emerging graphene quantum dots (GQDs) hold great promise as a new class of superior fluorophores for bio-imaging and optical sensing, owing to their remarkable physicochemcial properties and tunable photoluminescence properties. In this presentation, new methods to synthesize various GQDs and their applications for cellular imaging and optical sensing are demonstrated. In addition, based on theoretical modeling and calculations, we show that the emission of GQDs can be widely tuned from deep ultraviolet to near infrared by its size, edge configuration, shape, functional groups, defects, and heterogeneously hybridization of carbon network.

## **Biography**

Peng Chen is currently an Associate Professor of Bioengineering in School of Chemical and Biomedical Engineering at Nanyang Technological University (Singapore). He completed his PhD in University of Missouri (Columbia) in 2002. This was followed by a period of Postdoctoral Research at Harvard University. His research interests are in the areas of nanomaterials, biosensors, and bionanotechnology. He is particularly interested in applying interdisciplinary and integrative approaches to study biomedical problems.

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