# Luminescence Mechanism of the doped Graphene Quantum dots

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## Abstract
Due to the enormous merits, such as stable photoluminescence(PL), high fluorescent activity, low toxicity, excellent solubility and biocompatibility, Graphene quantum dots (GQD) have potential application in the fields of light-emitting diodes, bioimaging and electrochemical biosensing . The luminescence origin has been found to be attributed with quantum confinement effect, surface passivation, and doping. Recently our researches find that the nitrogen-doping is the effective way to improve the PL quantum efficiency of GQDs, however the electronic structure and luminescence mechanism still need to explore. In this talk, we will present some new results of the doped GQDs. Using the spectroscopic and time-resolved measurements, we try to understand the luminescence mechanism with different doping state such as pyridinic-N, pyrrolic-N and graphitic-N. We also studied the influence of oxygen-doping on PL of GQDs. The origin of the PL emission at 430nm with the PLE peak at 320nm previously explained as the carbine-like state from the free zigzag edge, is now recognized as from oxygen-doping. We also discussed the effects of the quantum confinement effect and the edge functional groups on the PL emission.

## References
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