Catalog # 06-0334 Graphene Quantum Dots (GQDs), Blue Luminescent

Color and Form:	dark brown pwdr.
Photoluminescence:	Absolute quantum yield: >65% Maximum excitation wavelength: 350 nm Maximum emission: 445 nm Full width at half maximum: 65 nm
Particle Size:	Particle diameter: <5 nm

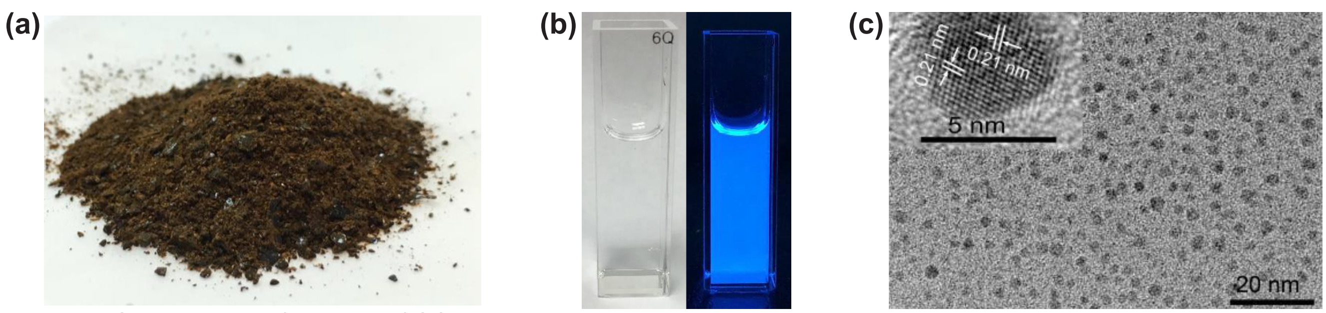
Instructions for Storage and Handling: Use within 6 months of purchase. Do not freeze. Store in dark.

Suggested Applications:

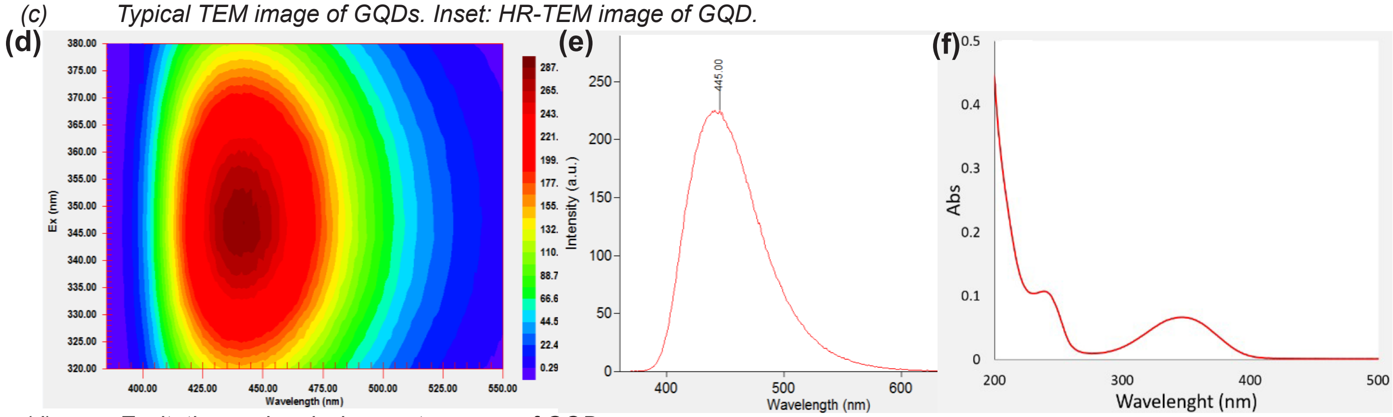
Graphene quantum dots (GQDs), sheets of few-layered graphene and lateral dimensions smaller than 100nm, possess strong quantum confinement and edge effects. Thus, they possess unique physical properties such as strong photoluminescence, which can be tailored for specific applications by controlling their size, shape, defects, and functionality.

In contrast to classic QDs, such as metal or silicon quantum dots, GQDs are biocompatible, photostable, and inherit superior thermal, electrical and mechanical propertires from the graphene. These features can greatly contribute to various state-of-the-art applications:

- Optical brighteners
- Taggants for security application[1]
- Bioimaging markers[2]
- Fluorescent polymers[3]
- Antibacterial[4], antibiofouling[5], and disinfection systems
- Heavy metals[7], humidity and pressure[8], sensors
- Batteries[9]
- Flash memory devices[10]
- Photovoltaic devices[11]
- Light-emitting diodes[12]



(a) Optical image of 5 grams of GQDs powder.
(b) Optical image of GQDs powder suspended in water under visible (left) and 365nm UV light (right).
(c) Typical TEM image of GQDs. Inset: HR-TEM image of GQD.



(d) Excitation and emission contour map of GQDs.
(e) Photoluminescence emission of GQDs excited at 350 nm.
(f) Absorption spectra of GQDs.

References:

1. http://onlinelibrary.wiley.com/doi/10.1002/anie.201206791/abstract
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3. http://pubs.acs.org/doi/abs/10.1021/acsami.5b06057
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