the next BIG small thing

Technical Data Sheet:

Aqua-Green Luminescent Graphene Quantum Dots (GQDs)

(Product number GQD-W-301)

Appearance:

Yellow suspension

Photoluminescence:

Quantum yield: >34%
Maximum excitation wavelength: 485nm
Maximum emission: 525nm
Full width at half maximum: 70nm

Particle size:

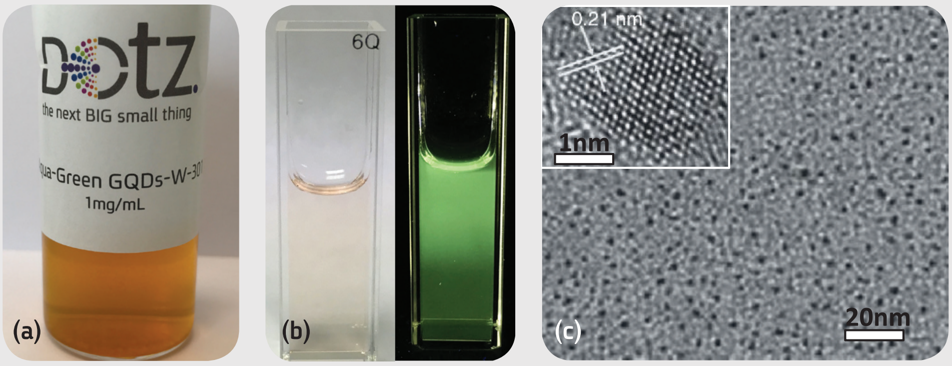
Particle diameter: <5nm
Topographic height: 1-2.0nm

Concentration:

1mg/mL

Medium:

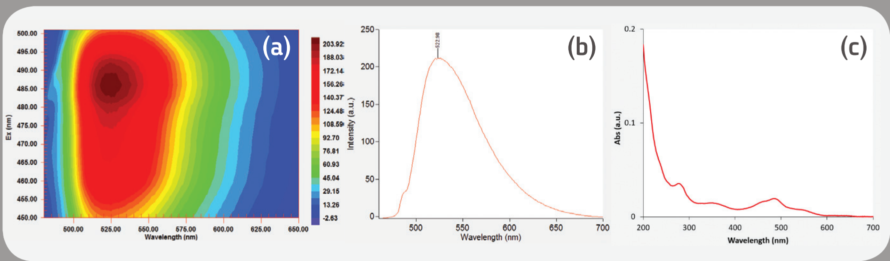
DI Water



(a) Optical image of GQDs suspension (1mg/mL).

(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.



(a) Excitation and emission contour map of GQDs.

(b) Photoluminescence emission of GQDs excited at 485nm.

(c) Absorption spectra of GQDs.

Instructions for storage and handling:

Keep container tightly closed. Keep container in a dark environment. Do not freeze.

Packaging Specifications

Typical packaging for research and sample includes plastic 100mL vials. Shipping documentation includes a Certificate of Analysis and Material Safety Data Sheet.

Suggested application:

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 properties 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[6]
- Heavy Metals[7], Humidity and Pressure[8] sensors
- Batteries[9]
- Flash memory devices[10]
- Photovoltaic devices[11]
- Light-emitting diodes[12]

References:

1 http://onlinelibrary.wiley.com/doi/10.1002/anie.201206791/abstract
2 http://onlinelibrary.wiley.com/doi/10.1002/ppsc.201400219/abstract
3 http://pubs.acs.org/doi/abs/10.1021/acsami.5b06057
4 http://pubs.acs.org/doi/abs/10.1021/acsami.6b01765
5 http://www.nature.com/articles/srep20142
6 http://pubs.acs.org/doi/abs/10.1021/nn501640q
7 http://www.sciencedirect.com/science/article/pii/S0013468615000468
8 http://pubs.acs.org/doi/abs/10.1021/nl4003443
9 http://pubs.acs.org/doi/abs/10.1021/nl504038s
10 http://iopscience.iop.org/article/10.1088/0957-4484/25/25/255203/meta
11 http://onlinelibrary.wiley.com/doi/10.1002/anie.200906291/abstract
12 http://link.springer.com/article/10.1007/s10853-012-7016-8