

Alkyl-Terminated Silicon Quantum Dots

Silicon Quantum dots as dry powder or dispersed in organic solvent

Description

Alkyl-terminated silicon quantum dots are readily dispersible in wide variety of non-polar organic solvents including toluene, hexane, chloroform or as a dry powder. These particles can be used in photovoltaic devices, light emitting diodes, sensors, and optical film applications.

Advantages Over Traditional QDs

- Free of toxic metals (e.g., Cd, Pb, In) or phosphines
- Bright PL, tunable from ~650 to 1000 nm (visible to near-IR)
- Low self-absorption due to large Stokes-shift >400 meV
- Stable PL at elevated temperatures > 200 °C and high humidity



Product Specifications

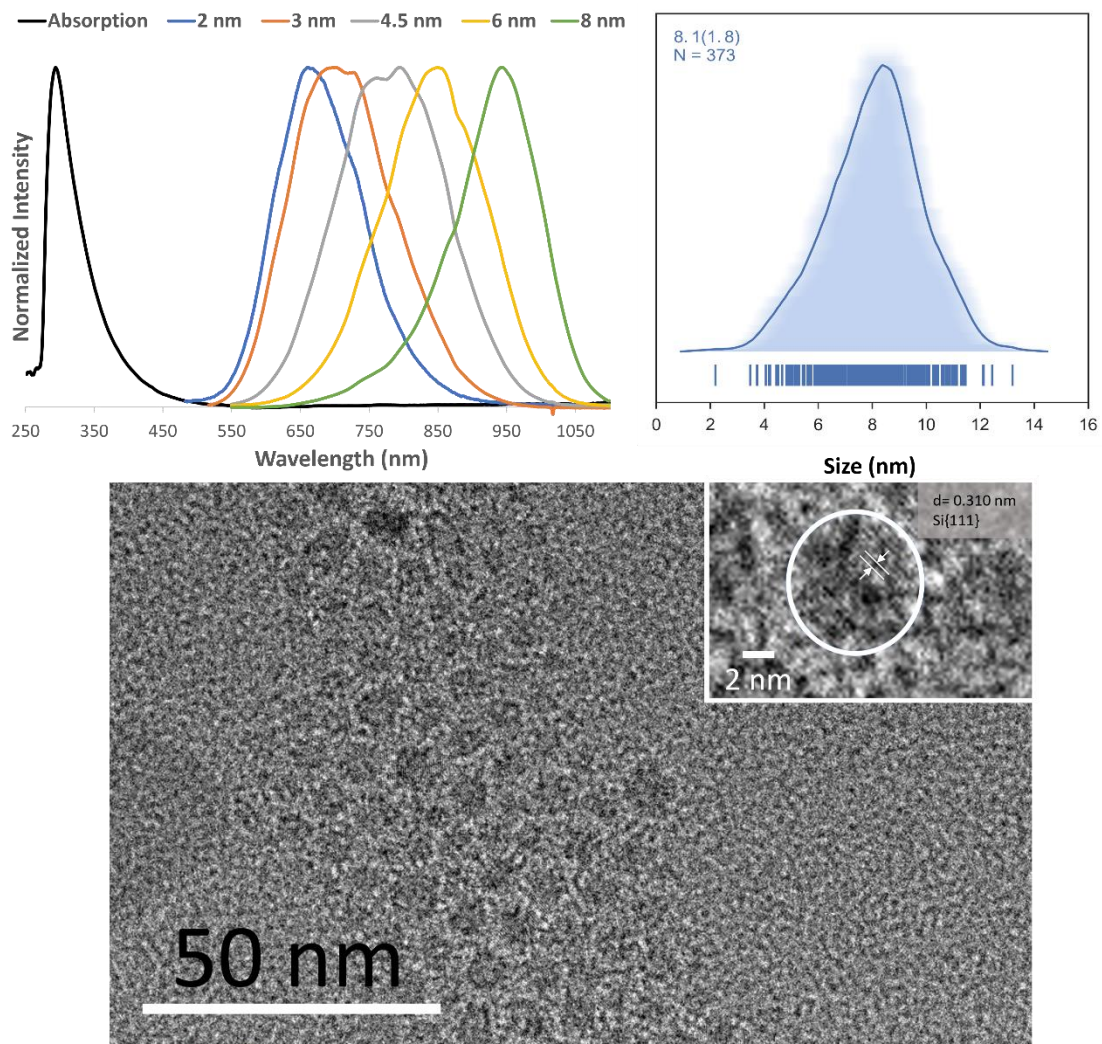
	Size*	PL _{max}	Catalog No.
Particle Sizes Available	2 nm	665 ± 20 nm	14-0101-S2
	3 nm	710 ± 20 nm	14-0101-S3
	4 nm	780 ± 20 nm	14-0101-S4
	6 nm	845 ± 20 nm	14-0101-S6
	8 nm	980 ± 20 nm	14-0101-S8
Material Composition	Silicon		
Forms	Orange/red powders or solutions		
Photoluminescence	λ _{em} 600 to 1015 nm		
FWHM	<120 nm		
PL Lifetime	>50 μs		
Functionalization Method		QY	Shelf Life
I		10 - 40% ± 5%	12 months ¹
II		30 - 60% ± 5%	3 months ¹
III		Up to 85% ± 5%	3 months ¹
¹ Note: The shelf life is approximate and require proper storage conditions. Materials improperly stored can oxidize and lose optical properties.			

Uses & Handling Recommendations

- Shipped as powders or in solution. 1 mL, 5 mL, and 20 mL solution in glass vials (bulk can be supplied upon request).
- Typical concentrations ~ 3 mg/mL.
- Exposure of alkyl terminated SiQDs to water will cause oxidation. Minimize exposure to water whenever possible. Water soluble SiQDs can be made upon request.
- Sonication can be used to help disperse the alkyl terminated SiQDs in desired organic solvent (usually toluene, hexanes, and other non-polar organic solvents).

[Contact us](#) for purchasing/customization options. AQM can tailor the surface chemistry to provide SiQDs suitable for specific applications.

Characterization Data



Figures 1-3. Photoluminescent emissions; Particle size histogram; Bright field TEM image.