

# Water Soluble Silicon Quantum Dots

## Silicon Quantum Dots dispersed in aqueous solvent

### Description

Acid-terminated, poly(ethylene oxide)-coated, oxide-rich silicon quantum dots (QDs) soluble in water and alcohols displaying tunable photoluminescence from orange to near-infrared under ultraviolet (UV) excitation. These particles can be used in biological imaging. Typical concentration of 1 mg/ml.

### Advantages Over Traditional QDs

- Free of toxic metals (e.g., Cd, Pb, In) or phosphines
- Bright PL, tunable from ~600 to 800 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

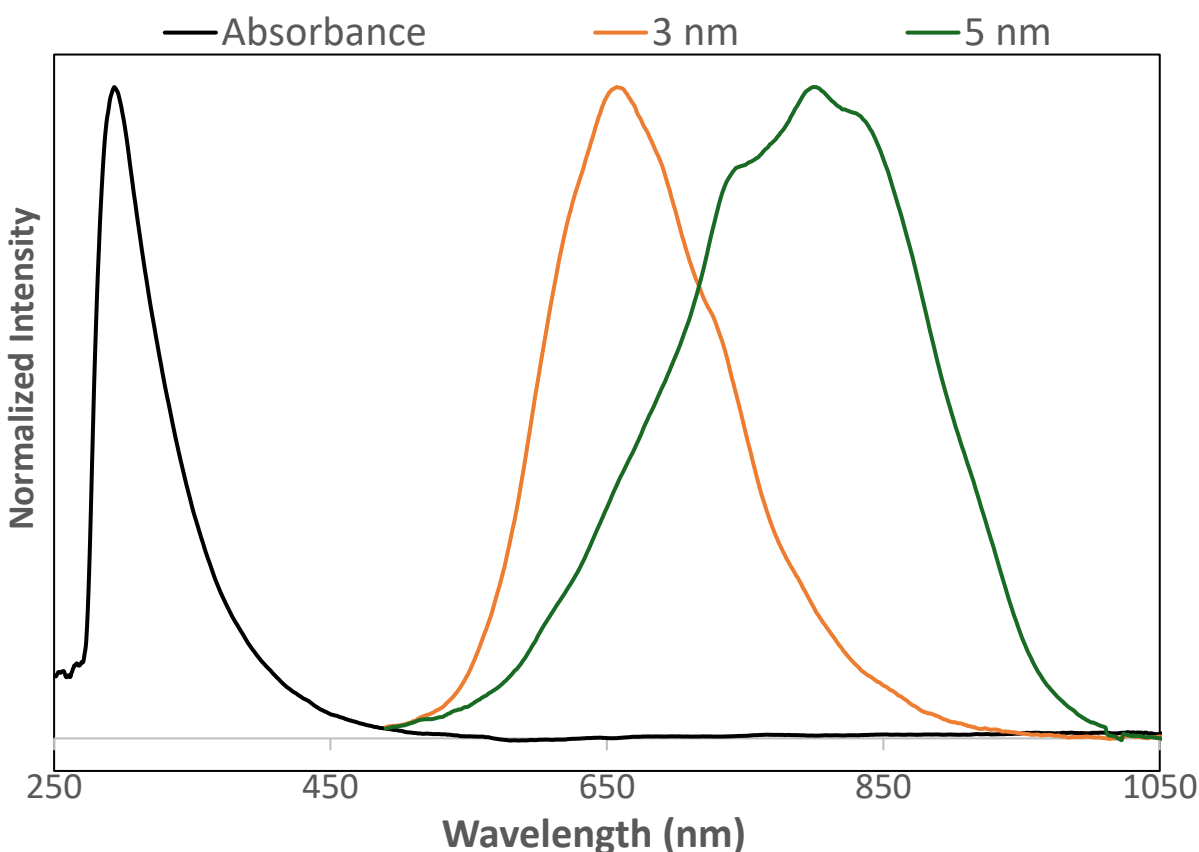
	Size	PL <sub>max</sub>	Catalog No.
<b>Particle Sizes Available</b>	3 nm	650 ± 20 nm	14-040202-S3
	5 nm	800 ± 20 nm	14-040202-S5
<b>Material Composition</b>	Silicon		
<b>Forms</b>	Orange or yellow solution		
<b>Photoluminescence</b>	$\lambda_{em} = 600$ to 800 nm		
<b>FWHM</b>	<200 nm		
<b>PL Lifetime</b>	>50 $\mu$ s		

## Uses & Handling Recommendations

- Shipped as solution. 1 mL, 5 mL, and 20 mL solution in glass vials (bulk can be supplied upon request).
- Typical concentrations ~1 mg/mL.
- Over time polymer SiQDs can aggregate and precipitate out of solution. Sonication can be used to help disperse the carboxylic acid terminated, poly(ethylene oxide) coated SiQDs in aqueous solvent.

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

## Characterization Data



**Figure 1.** Absorption spectra (black trace) and photoluminescence spectra of 3 nm silicon quantum dots (orange trace) and 5 nm silicon quantum dots (green trace). The emission maximum wavelength of 3 nm and 5 nm silicon quantum dots is 650 nm and 800 nm, respectively, when excited with 365nm light.