

EXAMPLE SPEC SHEET

Luminescent Silicon Quantum Dots (Si)

Our silicon luminescent quantum dot nanocrystals are made of biocompatible silicon, which makes these non-toxic quantum dots a good alternative to other heavy metal based materials. The silicon quantum dots are surface modified with different capping agents in order to prevent oxidation, with each spec sheet detailing the change in optical properties with surface functionality. These functionalities can also be further tailored and adapted to a desired application.

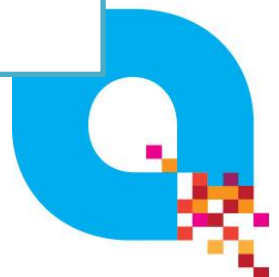
SPECIFICATIONS

- Material: Silicon nanocrystals
- Solvent: Deionized Water or alcohol (e.g. Methanol)
- Functionality: propylamine terminated (hydrophilic),
 - Si-(CH₂)₃NH₂ covalent bond on surface, prevents oxidation to oxide
- Size : 2 – 4 nm
- Physical Appearance: yellow oil or colourless solution
- Emits blue under UV-light

CHARACTERISATION SUPPLIED

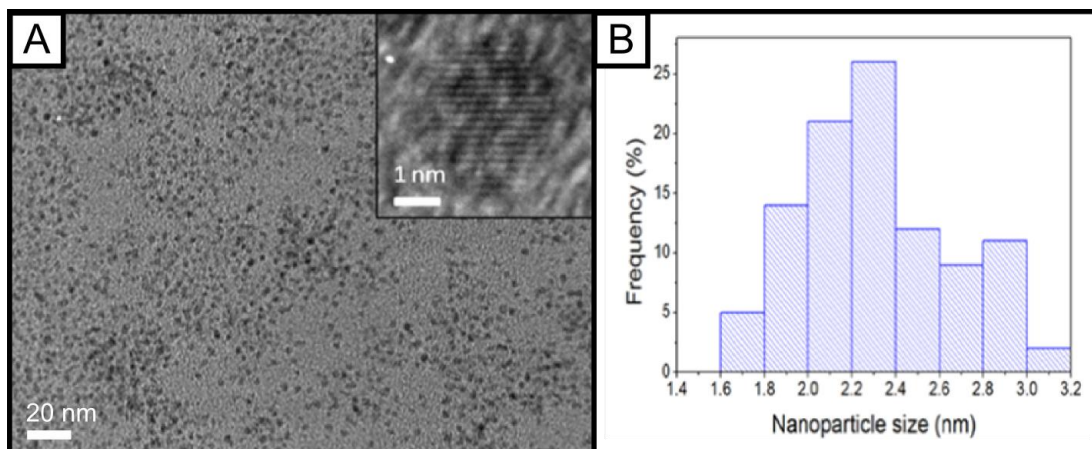
- Size distribution from Transmission electron microscopy (TEM)
- Absorbance spectroscopy (UV-Vis)
- Photoluminescence spectroscopy (PL)
- Fourier Transform Infrared Spectroscopy (FTIR)

Analysis and specifications may change with material. We will confirm characterisation supplied at time of enquiry.



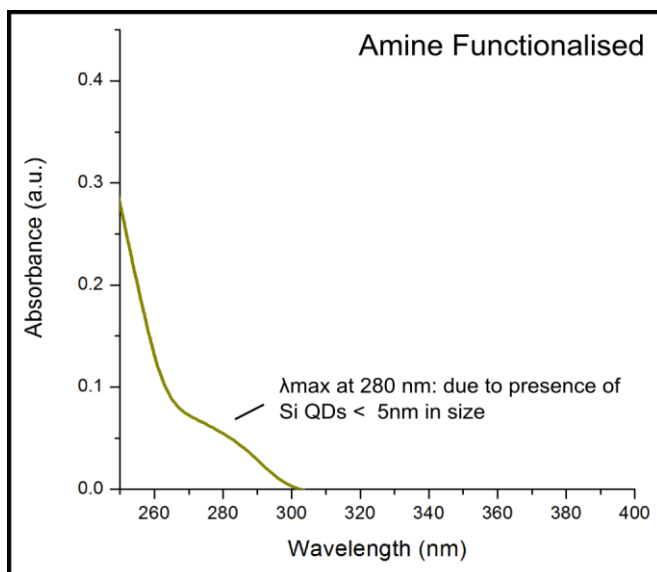
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EXAMPLE SIZE DISTRIBUTION AND TEM IMAGE

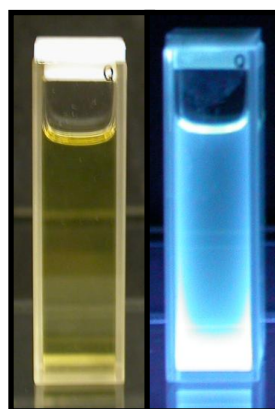


A) TEM image with B) associated size distribution of 2.3 nm Silicon Quantum dots.

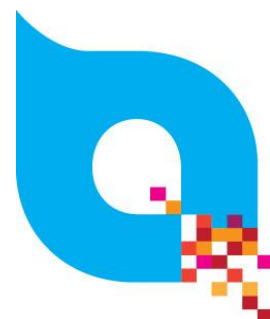
EXAMPLE UV-VIS – AMINE FUNCTIONALISED



Blue-emitting under UV lamp

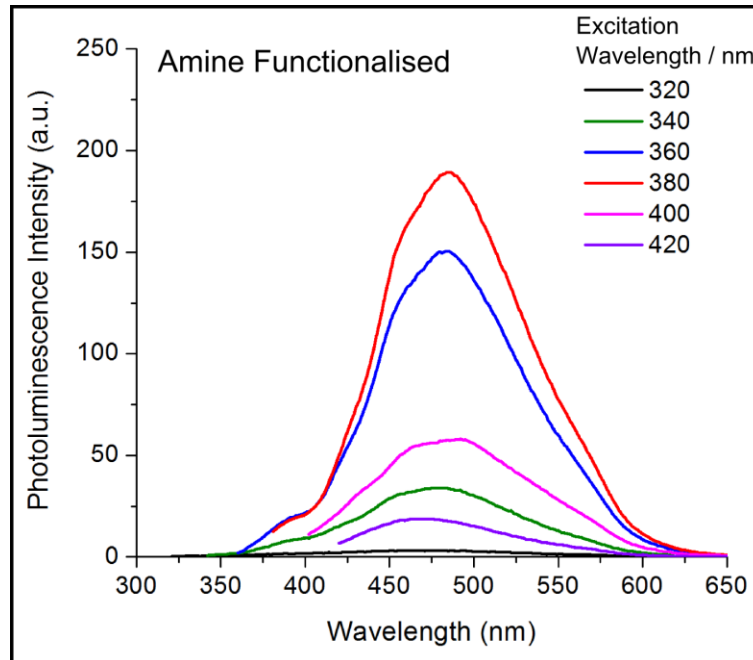


UV-Vis of Amine Functionalised Si QDs dissolved in chloroform with maximum absorption at 280 nm.

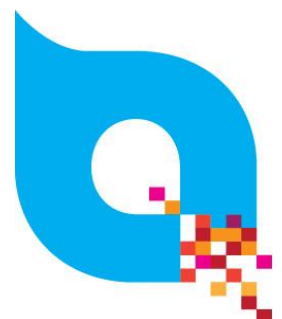


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EXAMPLE PHOTOLUMINESCENCE SPECTRA – AMINE FUNCTIONALIZED

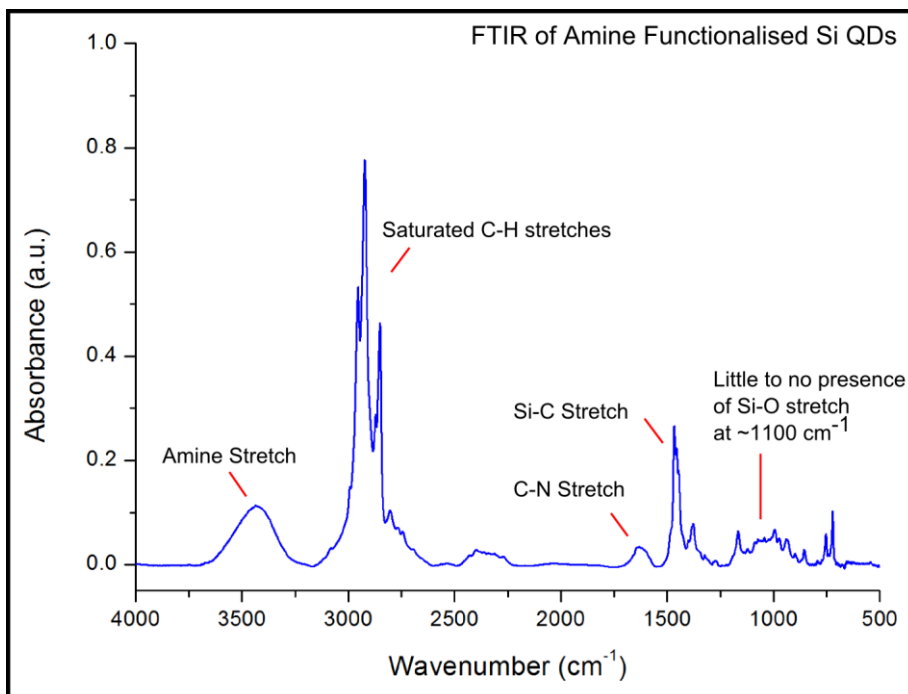


Photoluminescence (PL) of Amine functionalised Si QDs in chloroform. Strongest intensity emission occurs at 485 nm using an excitation wavelength of 380 nm.



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EXAMPLE FTIR – AMINE FUNCTIONALIZED



FTIR of Amine functionalised Si QDs in chloroform. Si-(CH₂)₃NH₂ surface functionality confirmed by presence of Si-C stretch and little to no presence of Si-O stretch.

