

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.

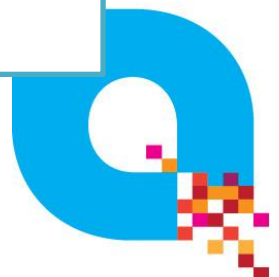
SPECIFICATIONS

- Material: Silicon nanocrystals
- Solvent: Non-polar solvent (e.g. Hexane)
- Functionality: hexane terminated (hydrophobic)
 - Si-(CH₂)₅CH₃ 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

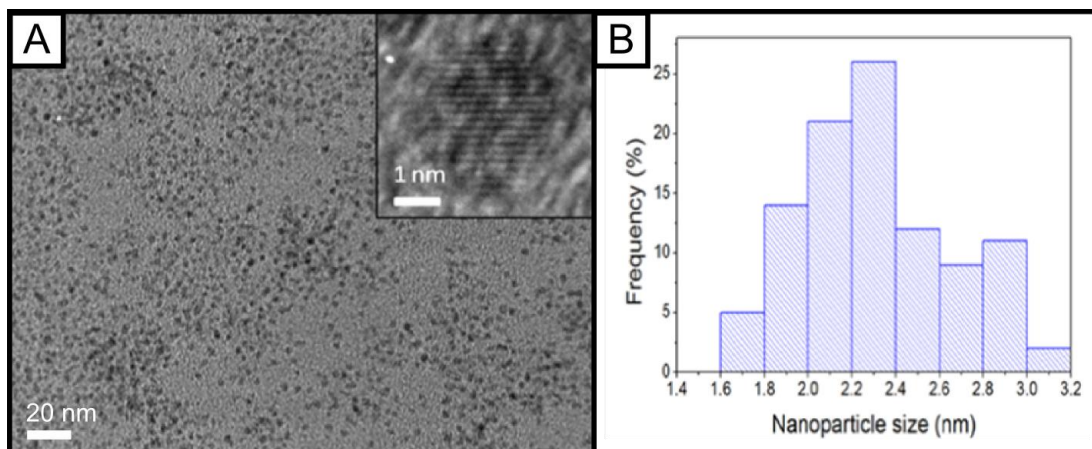
- Size distribution from Transmission electron microscopy (TEM)
- Absorbance spectroscopy (UV-Vis)
- Photoluminescence spectroscopy (PL)
- Fourier Transform Infrared Spectroscopy (FTIR)

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



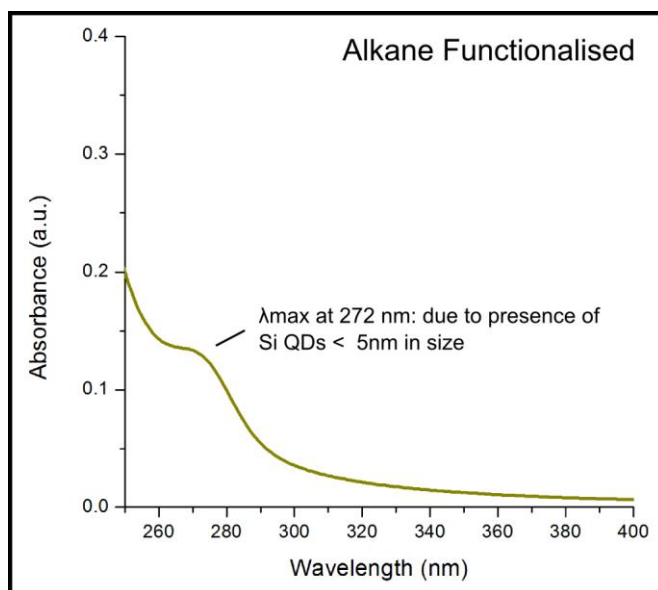
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EXAMPLE SIZE DISTRIBUTION AND TEM IMAGE



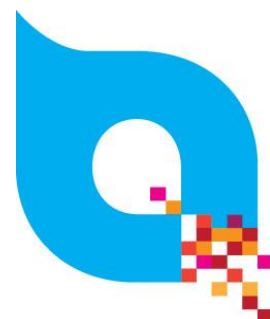
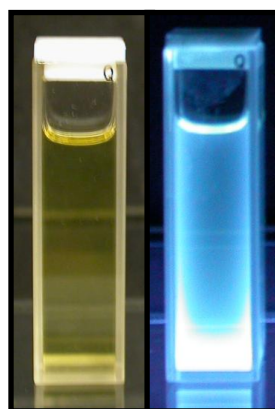
A) TEM image with B) associated size distribution of 2.3 nm Silicon Quantum dots.

EXAMPLE UV-VIS – AMINE FUNCTIONALISED



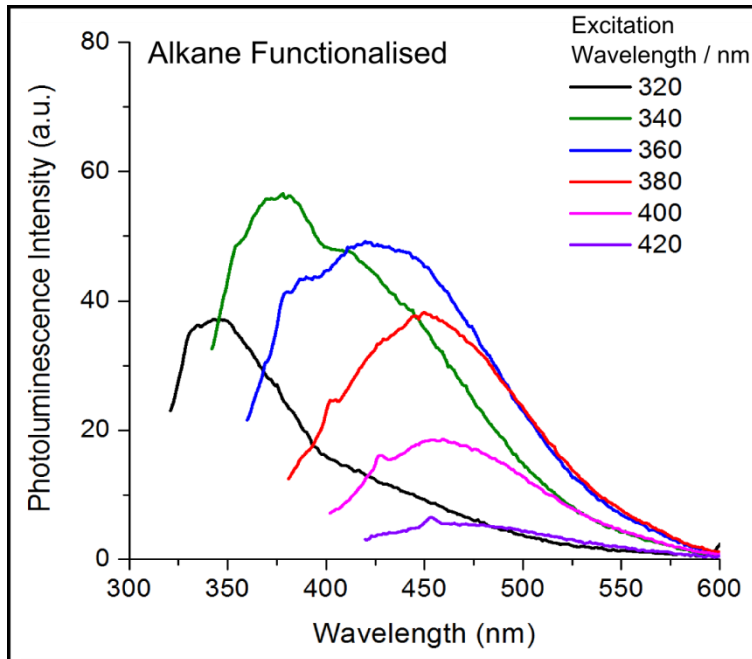
UV-Vis of Alkane Functionalised Si QDs dissolved in hexane with maximum absorption at 272 nm.

Blue-emitting under UV lamp

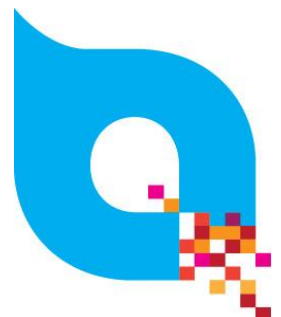


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EXAMPLE PHOTOLUMINESCENCE SPECTRA – AMINE FUNCTIONALIZED

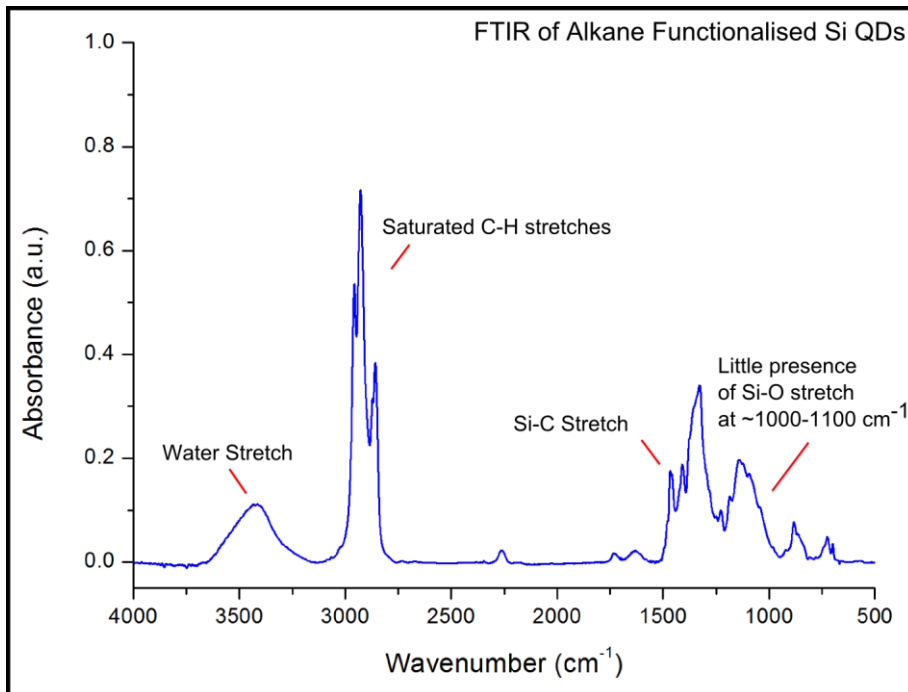


Photoluminescence (PL) of Alkane Functionalised Si QDs in hexane. Strongest intensity emission occurs between excitation wavelengths of 340 and 360 nm.



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EXAMPLE FTIR – AMINE FUNCTIONALIZED



FTIR of Hexane Functionalised Si QDs in hexane. Si-(CH₂)₅CH₃ surface functionality confirmed by presence of Si-C stretch and little to no presence of Si-O stretch.

