Cation Exchange of Aqueous CuInS$_2$ Quantum Dots

Thomas J. Macdonald$^{a,c}$, Yatin J. Mangewa$^{a,c}$, Melissa Dewi$^{a,c}$, Aoife McFadden$^b$, William M. Skinner$^a$, Thomas Nann$^{a,c,*}$

$^a$Ian Wark Research Institute, University of South Australia, Mawson Lakes, 5095 SA, Australia, E-mail: thomas.nann@unisa.edu.au
$^b$Adelaide Microscopy, The University of Adelaide, Adelaide, 5000 SA, Australia
$^c$ARC Centre of Excellence in Convergent Bio-Nano Science

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Synthesis of bulk material:

Roquesite (CuInS$_2$ Raw) preparation:
Elemental Cu (1.30g, 98% purity), In (2.35g, 99.99% purity) and S (1.33g, 99.99% purity) were combined stoichiometrically and sealed in a 10mm diameter silica tube under vacuum (10$^{-2}$ Torr). The sealed tube was heated slowly (1°C/min) to 400 °C in a furnace and allowed to anneal for 3hrs, after which it was further heated to 700 °C, annealed for a further 3hrs, followed by heating to 1050 °C and annealing for 4 days. The furnace was then turned off and the product was cooled to room temperature, followed by XRD characterization.

TiO$_2$ Paste formation:
2 g of TiO$_2$ particles (P25, Degussa) were added to a mortal and pastel containing 2 mL of DI water, 50 µL acetic acid and crushed to form a smooth paste. Once a smooth paste was obtained 50 µL of triton x-100 was added as a surfactant to prevent further aggregation of the particles suspended in the paste.

Figure S1: UV-Vis spectra, indicative of the near infrared CIS QDs
**Figure S2:** Photocurrents for TiO$_2$ (bare) and TiO$_2$ (CIS QDs)