Supplementary Material for PCCP
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Online Supplemental Information

A Systematic Examination of Surface Coatings on the Optical and Chemical Properties of Semiconducror Quantum Dots

Andrew M. Smith, Hongwei Duan, Matthew N. Rhyner, Gang Ruan, and Shuming Nie*

Georgia Tech and Emory University, Department of Biomedical Engineering,1639 Pierce Dr., Suite 2001, Atlanta, GA 30322, USA. Fax: 404 727 9873; Tel: 404 712 8595; E-mail: snie@emory.edu

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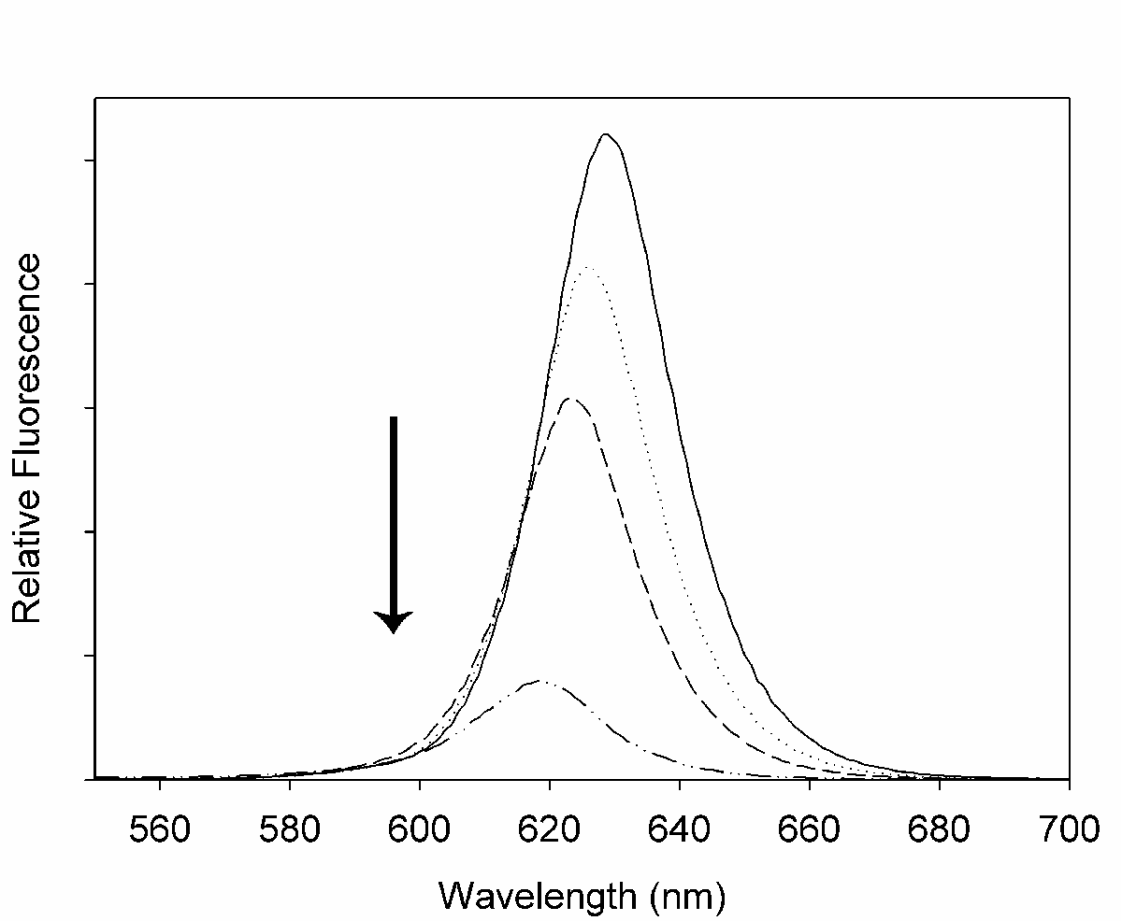

Fig. 1 Photooxidation of PEI-coated QDs, demonstrating a decrease in quantum yield and a blue-shift over time, with the arrow indicating increasing time.

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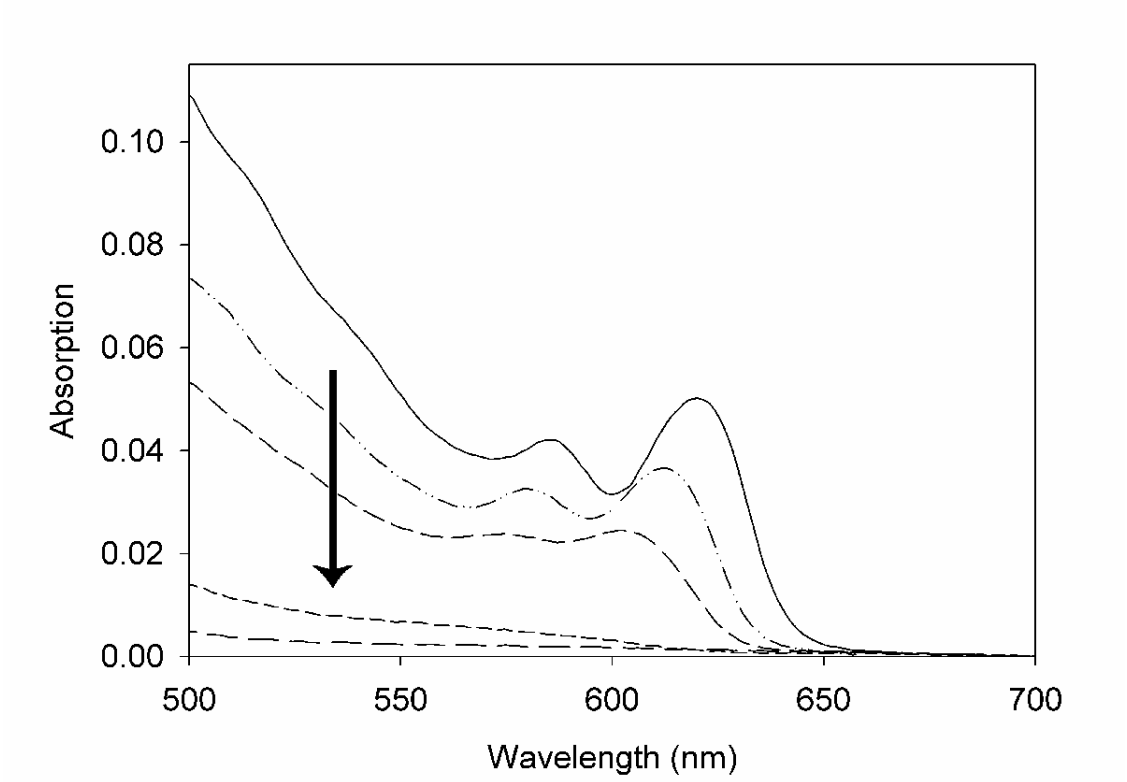

Fig. 2 Hydrogen peroxide-mediated oxidation of PEI-coated QDs, demonstrating a blue-shift of the absorption onset and gradual dissolution. Increasing time is indicated by the arrow.

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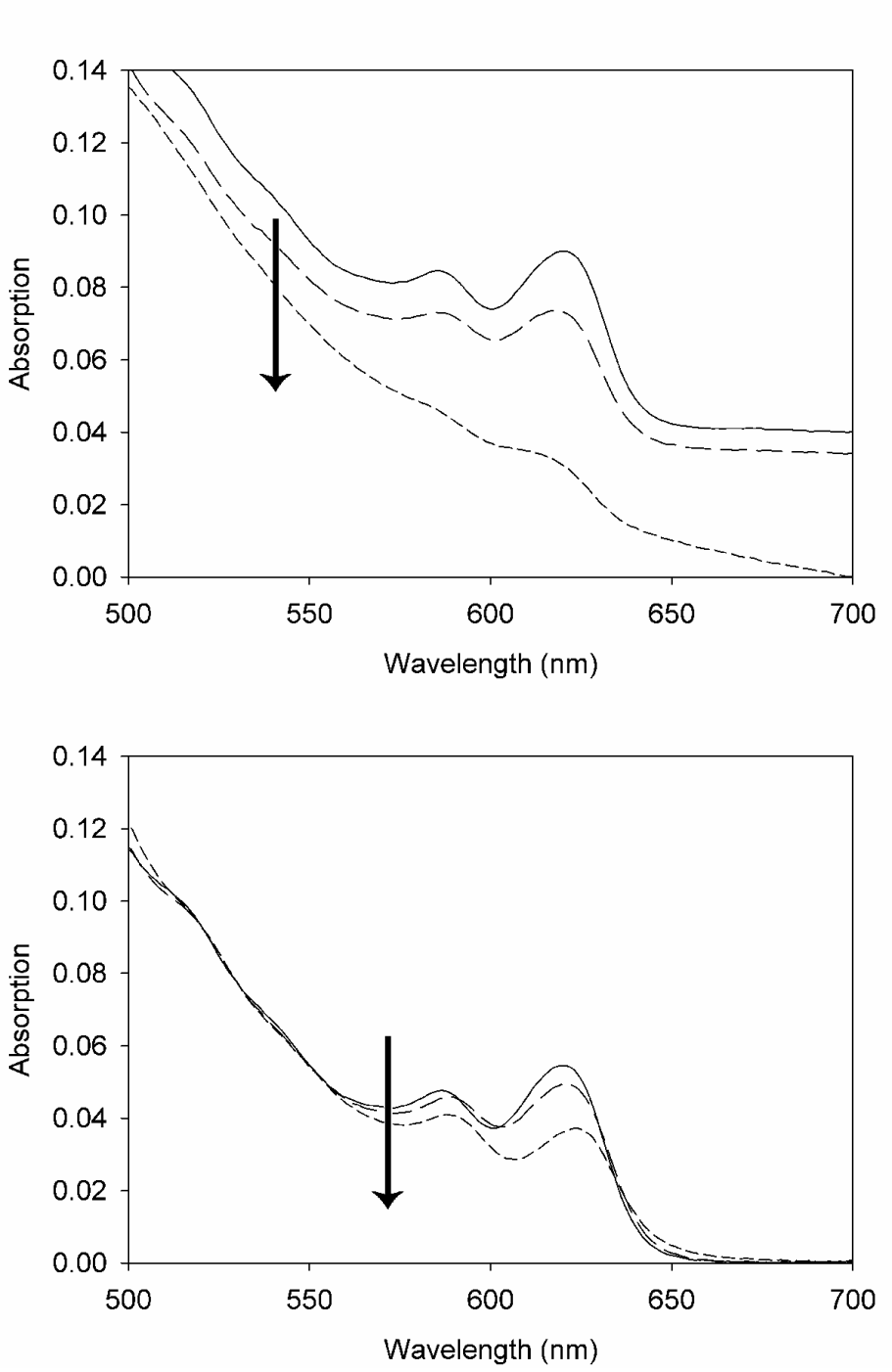

Fig. 3 Slow acid-mediated etching of QDs. Very little shift of the absorption onset occurs over the course of the 140 hour assay for QDs coated in diblock copolymer (top), but the first exciton peak decreases slightly in intensity. The QDs seem to slowly lose their colloidal stability, as evident from the increase in scattering in the lowest graph. For lipid-coated QDs (bottom), the first exciton peak decreases in intensity and slightly red-shifts during exposure to acid. The arrows indicate increasing time.

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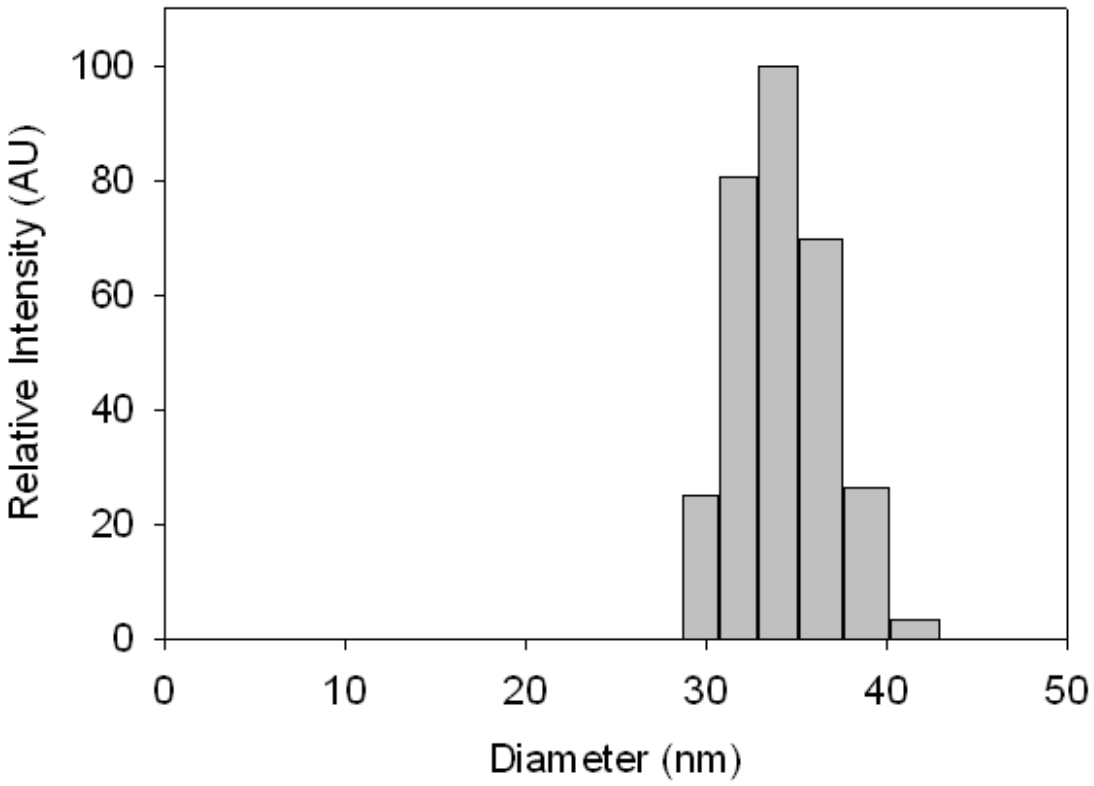

Fig. 4 Dynamic light scattering data for 2000 MW PEG – modified QDs coated with amphiphilic polycarboxylic acid. The zeta potential before conjugation was -34.7 ± 2.1 mV, and -6.5 ± 0.4 mV after modification.

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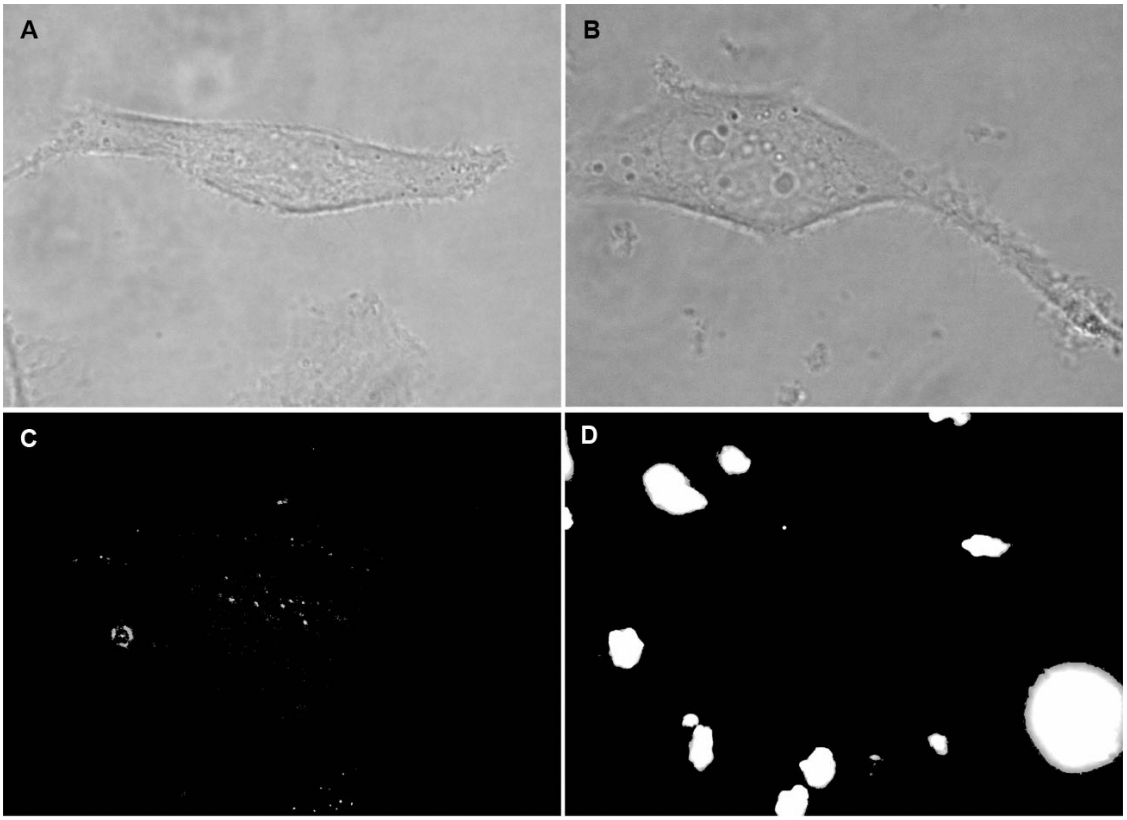

Fig. 5 Cellular uptake of QDs at 37ºC, visualized via bright field (top) and confocal fluorescence micrographs (bottom), focused near the cell centers. (A, C) Lipid encapsulated QDs show little aggregation or cellular uptake. (B, D) QDs coated in the amphiphilic polycarboxylic acid aggregate and precipitate under similar conditions.