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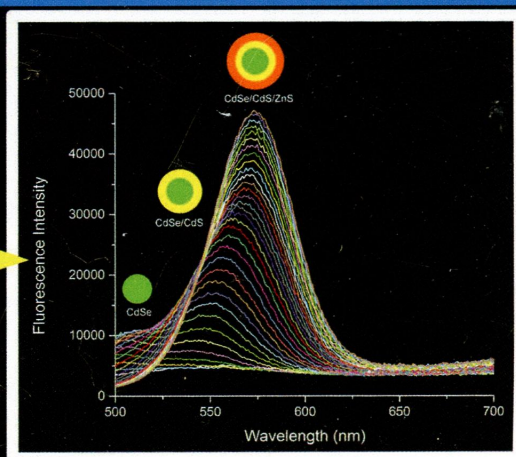
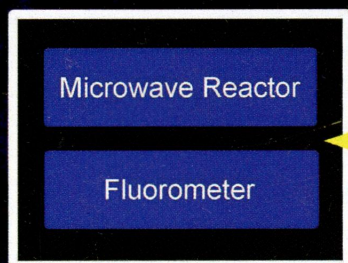
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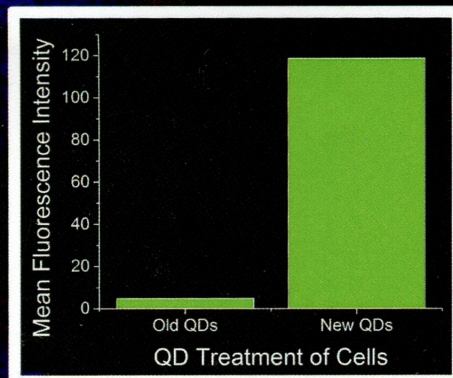
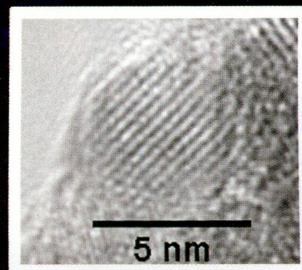
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Optimized Microwave
Synthesis of Bright
Cadmium Chalcogenide
Quantum Dots and
Their Cellular Uptake
(see page 22258)



ENERGY CONVERSION AND STORAGE, OPTICAL AND ELECTRONIC DEVICES,
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ON THE COVER: Optimized microwave synthesis of bright cadmium chalcogenide quantum dots and their cellular uptake. Fiber optic coupling of a microwave reactor with a fluorimeter allows for real-time observation of the evolution of the fluorescence of CdSe/CdS/ZnS quantum dots. With this data, it is possible to distinguish the development of the CdSe nuclei, followed by deposition of successive CdS and ZnS shells (note isosbestic point in the fluorescence data). Nucleation at 100 °C followed by microwave treatment at 155 °C led to quantum-dot formation in 55 min. Further improvement in the quantum yield of the quantum dots was possible by light irradiation during nucleation and post-microwave synthesis. Optimized quantum dots of ~5 nm size had quantum yields of 40 to 41%. With these bright quantum dots, their uptake into intestinal epithelial cells at concentrations of 16 nM could be tracked by confocal fluorescence microscopy, as seen in the background of the cover. (The blue color is from labeling of nuclei of cells by 4'-diamidino-2-phenylindole or DAPI, and the red color is antibody staining of E-cadherin to label cell junctions.) Mean fluorescence intensity detected by flow cytometry was markedly improved with the bright quantum dots, as seen in the bar charts. (Old quantum dots have quantum yield of 19% with a previously published microwave-based procedure.) See page 22258.

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Correction to “Controlling Oxidation Potentials in Redox Shuttle Candidates for Lithium-Ion Batteries”
Selin Ergun, Corrine F. Elliott, Aman Preet Kaur, Sean R. Parkin, and Susan A. Odum*

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Correction to “Do Surface Wetting Properties Affect Calcium Carbonate Heterogeneous Nucleation and Adhesion?”
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