

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

A Simple Route to Tunable Ordered Arrays of Quantum Dots

JESSICA PACIFICO, DANIEL GOMEZ, PAUL MULVANEY, University of Melbourne, School of Chemistry, Parkville VIC 3010, Australia — This work presents an innovative method to grow structurally defined systems of CdSe@ZnS quantum dots (QDs). By firstly utilizing nanosphere lithography (NSL) to generate hexagonally patterned metallic islands, self-assembly of QDs was achieved with the aid of appropriate linker molecules. The ordered arrays were analyzed using AFM imaging and confocal microscopy techniques. The method for building this type of arrays is quite simple and permits the scale-up and scale-down of the size of the arrays. The next step was the construction of a 3D structure by organizing a bi-functionalized chemical linker on the QDs surface, building a structure made of several layers of QDs. Optical properties were studied here. Such arrays may have a large range of applications, as CdSe@ZnS QDs are well-known as the photonic crystals used in waveguides or information storage. Jessica Pacifico, Daniel Gomez and Paul Mulvaney, *Advanced Materials*, in press, 2004.

Jessica Pacifico
University of Melbourne

Date submitted: 09 Dec 2004

Electronic form version 1.4