Capacity of Nano-reactors of AOT Micro-emulsions to Form and Sustain Ultra Small Semiconductor Quantum Dots

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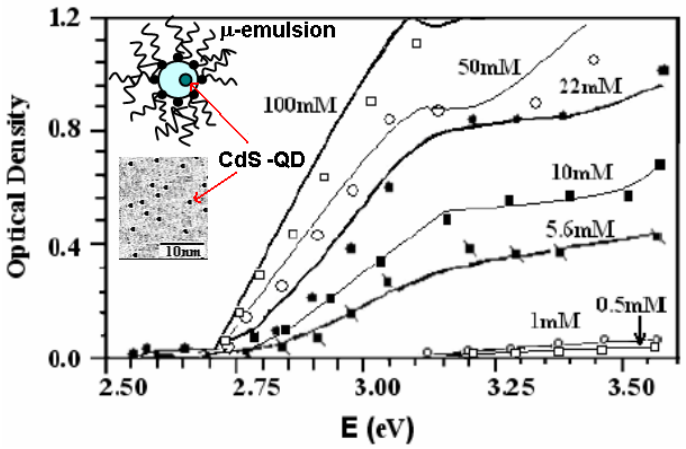

In this paper, we study the capacity of aqueous nanoreactors of AOT microemulsions for the formation of ultrasmall semiconductor QDs (8.7 Å - 11.8 Å) by fixing w ([H2O]/[AOT]) and varying the concentration of CdS up to 100 mM. High concentrations of CdS are useful to improve the yield while best-utilizing nanoreactors and to give a tight control over size and polydispersity. The tight binding (TB) method, being much more accurate than the effective mass approximation (EMA), gives results in good agreement with x-ray diffraction (XRD) and transmission electron microscopy (TEM).