

Abstract Submitted
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Ligand Functionality to Control Morphology, Solubility, and Assembly Behavior of CdSe Nanorods WEI WANG, SHENGGUO JIA, SARBAJIT BANERJEE, MICHAEL STEIGERWALD, IRVING HERMAN, Columbia University, MATERIALS RESEARCH SCIENCE AND ENGINEERING CENTER, COLUMBIA UNIVERSITY TEAM — By varying the length of the carbon chain of the ligand, while keeping other reaction parameters the same, CdSe nanorods with different diameters and lengths, branched nanorods, and even nano-arrows have been synthesized. Since all the ligands used are phosphonic acids with the same binding group, the length of the carbon chain of the ligand can dramatically change the size and morphology of the nanocrystals. Thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC) have been used to investigate the chemical composition of the nanorods. CdSe nanorod thin films have been made in hexane by electrophoretic deposition. The number and length of the ligands can dramatically change solubility, electrophoretic mobility of the nanorods, and quality of the nanorod film. We shall discuss mechanisms for ligand control of the nanocrystal structure. This work is supported by the MRSEC program of the National Science Foundation under Award No. DMR-0213574 and by the New York State Office of Science, Technology, and Academic Research (NYSTAR).

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