

Fabrication of Silica-Coated CdSe/CdS Quantum Nanorods and study of their amphiphilic behavior

조준희, 엄기주, 이강택†
연세대학교
(klee@yonsei.ac.kr†)

Quantum nanorods(QNRs) have drawn much attention by their anisotropic optical properties. By the quantum confinement effect, QNRs have broad absorption and narrow emission spectra. QNRs have anisotropic morphology which results in unique luminescent properties. Especially, QNRs emit polarized light mainly along the long axis. For practical use of QNRs, they must be aligned in optical devices to improve efficiency. Many assemblies of QNRs have been reported such as vertically standing, end-to-end linkage and side-by-side packing of QNRs. These methods use ligand exchange, ligand etching of QNRs and solvent evaporation. Generally, QNRs have hydrophobic surface because of the ligands used in their synthesis. Here, we synthesized CdSe/CdS QNRs and used them to make silica-coated quantum nanorods(SQRs). SQRs have both hydrophobic quantum nanorod and hydrophilic silica sphere similar to a surfactant. We studied the amphiphilic behavior of SQRs and we believe our research provides possibilities of SQRs to form unique shapes in solvent or polymer matrix.