**π−Conjugated Molecule−Silicon Quantum Dot Hybrid Polymers**

Hyun-Dam Jeong

*Department of Chemistry, Chonnam National University, Gwangju 500-757, Republic of Korea.*

**Abstract**

The Si QDs capped with π conjugated molecules (1−octene, phenylacetylene, and 1, 4−diethynylbenzene) exhibit red-shift in ultraviolet-visible absorption and photoluminescence spectroscopy. π−conjugated molecule−Si QD hybrid polymer was synthesized by cross−coupling reaction. Ultraviolet–visible absorbance, photoluminescence and valence band spectra of the π−conjugated molecule−Si QD hybrid polymer show absorption band in the range 370−400 nm, emission at 500 nm, and valence band edge at binding energy of 4.1 eV which are shifted from those of 4−diethynylstyryl terminated Si QD, indicating strong electronic coupling between Si QDs. The electron transport and transfer properties of π−conjugated molecule bridged Si QD dimer were investigated using quantum mechanical and quantum chemical calculations.