

A study on the fluorescence quenching mechanism of quantum dots caused by aggregation

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Quantum dots (QDs) have been widely studied in many field because of its unique optical properties such as size-tunable emission wavelength and resistance to photobleaching compared to organic dyes. Especially, in applications of energy transfer phenomenon, QDs have been widely used as donors. So, even though there are many studies about fluorescence quenching of QDs caused by energy transfer phenomenon, few studies are available on the aggregation of QDs. We have investigated the fluorescence quenching mechanism of QDs caused by aggregation of QDs. To elucidate mechanism of fluorescence quenching, we synthesized core/shell QDs and induced the aggregation of QDs. QD aggregation and fluorescence quenching were monitored by transmission electron microscopy, quasi-elastic light scattering, photoluminescence spectroscopy and UV-vis spectroscopy. This work was supported by the National Research Foundation of Korea (NRF) grant (Nos. 2011-0029118, 2009-0082417).