Fluorescence Resonance Energy Transfer between Quantum Dots and Organic Dyes

엽신, 김종성*
경원대학교
(jskim@kyungwon.ac.kr*)

Fluorescence resonance energy transfer (FRET) is one of few tools available for measuring nanometer scale distance changes of molecules in vivo. It has extensive application of biopolymer interaction, immunoassay, nucleic acid detection, and so on. Because of the limitations such as narrow excitation bands and low resistance to photo bleaching of traditional organic dyes, their application in FRET was limited. Semiconductor nanoparticle quantum dots (QDs) are luminescent inorganic fluorophores which can be excited with a single light source for multicolor light emission. They are attractive especially in the area of FRET due to their long-term photo stability and size dependent emission spectrum. In this work we studied FRET between QDs and organic dyes. We investigated the fluorescence emission spectrum change from solutions containing QDs and Alexa Fluor labled goat-rabbit IgG with different Alexa Fluor concentrations. The fluorescence intensity of QDs was decreased while that of Alexa Fluor was increased with increasing Alexa Fluor concentrations (λex = 405nm). The FRET was also confirmed via fluorescence life time measurement.