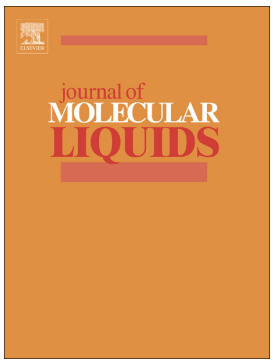

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Study of chemical physics on energy transfer phenomenon between quantum dots and a designed diporphyrin in solution

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Abstract

The present paper reports a case study of energy transfer (ET) phenomenon from the excited CdS/ZnS core-shell type quantum dots (QDs) having particle size of ~2 nm to a designed diporphyrin (**1**) molecule in solution. Photoluminescence intensity measurements and lifetime quenching experiments establish the process of Förster resonance energy transfer (FRET) from QDs to **1** in toluene. Magnitude of bimolecular quenching constant of QDs/**1** system (2.185×10^{13} sec^{-1}) rules out the possibility of diffusion controlled mechanism in present work. It is proposed that QDs/**1** system may be employed as an efficient energy transfer unit for possible application in photosensitization.

Key words: Quantum dots; diporphyrin; FRET; bimolecular quenching constant; charge-separation.

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