Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Photophysical properties of hemicyanine dyes in zeolite film grown on glass plate DOSEOK KIM, T. K. SHIM, M. H. LEE, Department of Physics, Sogang University, H. S. KIM, K. B. YOON, Department of Chemstry, Sogang University — Hemicyanine dye molecules were put into the pores of zeolite (ZSM-5) crystals self-assembled on a glass substrate, and their photophysical properties were investigated by using time– resolved fluorescence methods. The dye molecules were found to be aligned normal to the plate along the vertical channel of the pore and oriented unidirectionally. The photoluminescence (PL) decay lifetime of the dye molecules in zeolite pore measured by the Time-Correlated Single Photon Counting (TCSPC) method was several nanoseconds, which is much longer compared to that of the same dye in solution phase. This can be interpreted as the restricted twisted intramolecular charge transfer of the molecules confined in zeolite pores. We compared the photophysical properties (steady-state and time-resolved PL) from the molecules in various zeolite crystals with different structural and dielectric properties. This zeolite film can potentially be used as a matrix for investigating the optical and photophysical properties of a molecule in controlled environment.

Doseok Kim
Department of Physics, Sogang University

Date submitted: 28 Nov 2004 Electronic form version 1.4