

Abstract Submitted
for the OSF08 Meeting of
The American Physical Society

Solvent Effect on Linear Photophysical Properties of a Two Photon Absorbing Dye JENNIFER MONAHAN, AFRL/RX, SOCHE, WSU-Chemistry Dept, JOY ROGERS-HALEY, AFRL/RX, UES Inc., JONATHAN SLAGLE, AFRL/RX, AT&T Government Solutions, RAMAMURTHI KANNAN, AFRL/RX, Systran Systems Inc, LOON-SENG TAN, AUGUSTINE URBAS, AFRL/RX — The nonlinear photophysical properties of two-photon absorbing materials have been of great interest but have not been well understood. The Air Force Research Laboratory has developed a two-photon absorbing dye termed AF240 which consists of an electron donating group linked to a π -conjugated center then to an electron withdrawing group. A solvent study was undertaken in which AF240 was investigated in order to determine the effect of solvent on the linear photophysical properties. These properties include the ground state molar absorption coefficient, steady-state emission, time resolved emission utilizing time correlated single photon counting, and triplet absorbance spectra. The ground state and triplet absorbance spectra indicate a slight red shift due to an increase of polarity of the solvent. Dramatic red shifts in the steady state emission also have been observed which result from an increase in the polarity of the solvent. The formation of an intramolecular charge transfer (ICT) state has been observed and determined to be the origin of these changes with solvent.

Jennifer Monahan
Air Force Research Laboratory-Materials and Manufacturing Directorate
(AFRL/RX), SOCHE, WSU-Chemistry Dept

Date submitted: 01 Oct 2008

Electronic form version 1.4