

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Single-crystal films of a combination of materials (co-crystal) involving DAST and IR-125 for electro-optic applications A. NARAYANAN, J. TITUS, H. RAJAGOPALAN, P. VIPPA, M. THAKUR, Photonic Materials Research Laboratory, Auburn University, AL — Single-crystal film of DAST (4'-dimethylamino-N-methyl-4-stilbazolium tosylate) has been shown [1] to have exceptionally large electro-optic coefficients ($r_{11} \sim 770$ pm/V at 633 nm). In this report, single crystal film of a combination of materials (co-crystal) involving DAST and a dye molecule IR-125 will be discussed. Modified shear method was used to prepare the co-crystal films. The film has been characterized using polarized optical microscopy, optical absorption spectroscopy and x-ray diffraction. The optical absorption spectrum has two major bands: one at about 350–600 nm corresponding to DAST and the other at about 600-900 nm corresponding to IR-125. The x-ray diffraction results show peaks involving the presence of DAST and IR-125 within the co-crystal film. Since the co-crystal has strong absorption at longer wavelengths it is expected to show higher electro-optic coefficients at longer wavelengths. Preliminary measurements at 1.55 μm indicate a high electro-optic coefficient of the co-crystal film. [1] Swamy, Kutty, Titus, Khatavkar, Thakur, *Appl. Phys. Lett.* 2004, 85, 4025; Kutty, Thakur, *Appl. Phys. Lett.* 2005, 87, 191111.

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Date submitted: 29 Nov 2005

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