Abstract Submitted
for the SES08 Meeting of
The American Physical Society

Dye Assisted-Optical Lithography of Polymers from Liquid-Phase
REDAHEGN SILESHI, JEAN-MISHEL TAGUENANG, FERNANDO CALZZANI, ASCHALEW KASSU, ANUP SHARMA, Alabama A&M University — There has been much recent interest in polymeric materials for holographic gratings in the field of information storage, wave guide coupling, and non linear optoelectronics. Polybutadiene which is synthetic rubber is biologically benign and used in making it attractive as a platform for biomolecular applications. NBD dye assisted optical Lithography of polybutadiene polymers from liquid phase is our main interest here .aqueous solution of NBD (NBD dissolved in distilled water having various concentration) is confined between two polybutadiene coated glass substrate. The aqueous solution is contact with the coated surface. The two glass substrates are separated by a spacer which provide enough space for the molecules to move and rearrange themselves. Interferometery of two coherent beams derived from the 488 nm Argon-ion laser excites the dye. Formation of the grating is due to the laser excited dye with a polymer on the substrate. Dependency of light diffraction efficiency on the concentration of the aqueous solutions as well as intensity of the laser will be investigated. The interesting phenomenon in this technique is following a short initial exposure the grating continues to grow for several time after the beam is blocked.

Redahegn Sileshi
Alabama A&M University, Department of Physics, Normal, AL 35762

Date submitted: 16 Sep 2008 Electronic form version 1.4