Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Estimation of third-order nonlinear optical susceptibility $\chi^{(3)}$of synthetic Cu_2O crystal[1] SHAHIN MANI, JOON JANG, JOHN KETTERSON, Department of Physics & Astronomy, Northwestern University, KETTERSON'S TEAM — High-quality crystals of Cu_2O were prepared by an improved method for thermally oxidizing metallic copper. We report the nonlinear refractive index (n_2) and the nonlinear two-photon absorption coefficient (β) of the resultant crystals. The following techniques were utilized: i) Z-scan, ii) third-harmonic generation, and iii) intensity-dependent interferometry. The third-order susceptibility ($\chi^{(3)}$) of a material plays important role in optical signal processing including switching, altering the frequency and the transmission characteristics. A comparison between the third-order nonlinear susceptibilities of a standard nonlinear reference material, carbon disulfide (CS_2) and Cu_2O will be made.

[1]Supported by the National Science Foundation under grant CCF 03-29957.

Shahin Mani
Department of Physics & Astronomy, Northwestern University

Date submitted: 28 Nov 2008 Electronic form version 1.4