Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Optical characterization of single crystals of the organic semiconductor rubrene J.R. WEINBERG-WOLF, L.E. MCNEIL, Department of Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, SHUBIN LIU, High Performance Computing Group, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, CHRISTIAN KLOC, Lucent Technologies, Murray Hill, NJ 07974 — 5,6,11,12-tetraphenyl tetracene (rubrene) is an organic semiconductor with a reported mobility of up to 20 cmˆ2/Vs and a near 100% photoluminescence yield. It is receiving much attention for its possible uses in electronic devices. A detailed analysis of the Raman spectrum of rubrene single crystals will be discussed in light of isolated-molecule Raman simulations. The spectra will also be compared to measurements and simulations of single crystal tetracene Raman spectra, as the tetracene molecule is the backbone of the rubrene molecule. The effects of temperature on the Raman spectrum of the crystalline rubrene will also be presented. One important conclusion from the vibrational studies is that there is very small intermolecular coupling between rubrene molecules in the solid state.

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Date submitted: 01 Dec 2004 Electronic form version 1.4