Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Charge Transfer Molecular Rotor DCVJ Investigated by Coherent Anti-Stokes Raman Spectroscopy LASZLO UJJ, SCOTT MILLER, JONATHAN WELCH[1], CHARLES AMOS, CHANDRA PRAYAGA, Dept.of Physics, UWF — Coherent anti-Stokes Raman Spectroscopy (CARS) has been shown to be one of the most powerful experimental methodologies for obtaining vibrational information from both stable and transient molecular species[1]. The electronically enhanced polarization sensitive version of CARS is even more effective for measuring molecular vibrational information not easily reachable by spontaneous Raman spectroscopy. Theoretical and experimental principles associated with CARS with an emphasis on points relevant to the interpretation of experimental spectra will be presented. The method is applied to measure the vibrational manifold of DCVJ for the first time. DCVJ is a charge transfer molecular rotor showing a viscosity dependent fluorescence quantum yield. Based upon the measured CARS spectra, the effect of inhibition of the internal rotation on the vibrational motion of the molecule will be discussed. The design and operation of an all solid-state broadband nanosecond CARS system will be also presented. An overview of applications of molecular rotors in biology and information technology will be outlined. Ref.: **1**. L. Ujj and G. H. Atkinson, "Coherent Anti-Stokes Raman Spectroscopy", in Handbook of Vibr. Spect., Wiley & Sons, Ltd., (2002).

[1]jmw49@students.uwf.edu

Laszlo Ujj
Associate professor, Dept.of Physics, UWF

Date submitted: 24 Jan 2009 Electronic form version 1.4