STATE-TO-FIELD VIBRATIONAL ENERGY TRANSFER FROM S_1 *PARA*-DIFLUOROBENZENE IN COLLISIONS WITH SEVERAL INERT GAS PARTNERS.

T. A. STONE, D. L. CATLETT, AND C. S. PARMENTER, *Indiana University Department of Chemistry, Bloomington, Indiana 47405*.

State-to-field vibrational energy transfer (VET) from several levels within the S_1 ($^1B_{2u}$) manifold of *para*-Difluorobenzene (*p*DFB) vapor at 300 K in collisions with a series of gases is currently being examined. Vibrational relaxation by collisions with He, Ne, Ar,[a] Kr, and Xe from three initial levels with vibrational energies ranging to 1634 cm^{-1} is probed. The resulting fluorescence spectra allow for the determination of absolute rate constants and cross sections for the collisional transfer of vibrational energy into the surrounding S_1 vibronic field of states.

[a] D. L. Catlett and C. S. Parmenter, *J. Phys. Chem.*, **95**, 2864 (1991).