INVESTIGATION OF INTERNAL MOTION IN THE SYM CONFORMER OF 9-FLUORENEMETHANOL: A GAS PHASE HIGH RESOLUTION ELECTRONIC SPECTROSCOPY STUDY [a]

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Last year, results were presented on the high resolution fluorescence excitation spectra of the $S_1 \leftarrow S_0$ origin transitions of two conformers of 9-fluorenemethanol (9FM). Theoretical calculations predicted two conformers, designated as symmetric and unsymmetric. Each of the two origin bands were uniquely assigned to a conformer. A splitting was observed in the origin band of the symmetric conformer, and possible explanations were presented for this splitting. One explanation involved a symmetric motion of the -OH group above the plane of the ring system, made possible by a concerted motion involving rotation about the C_9-C_α bond and rotation of oxygen about the C_α-O bond. Spectra have now been taken of deuterated 9FM, with the -OH group being replaced by -OD. Analysis of these results will provide further information about the observed internal motion. The sym 9FM-D origin is found to be blue-shifted relative to 9FM and displays a reduced splitting.

[a] Work supported by NSF (CHE-0315584)