POPULATION TRANFER SPECTROSCOPY OF N-ACETYLTYPTOPHAN METHYLAMIDE: DETERMINATION OF ISOMERIZATION QUANTUM YIELDS

BRIAN C. DIAN, ASIER LONGARTE, JASPER R. CLARKSON, and TIMOTHY S. ZWIER, *Department of Chemistry, Purdue University, West Lafayette, IN 47907-1393*.

The dynamics of conformational isomerization are presented for a methyl-capped dipeptide, N-acetyltryptophan methyl amide (NATMA), using infrared-ultraviolet hole-filling and IR-induced population transfer spectroscopies. These methods utilize selective infrared excitation of single conformations of the molecule in the early portions of a gas-phase expansion, followed by collisional re-cooling of the excited population into its conformational minima for subsequent conformation-specific detection. Efficient isomerization is induced by the infrared excitation that redistributes population between the same conformations that have population in the absence of infrared excitation. The quantum yields for transfer of the population into the various conformational minima depend uniquely on which conformation is excited and on which NH stretch vibration is excited within a given conformation.