

TORSION-ROTATION ANALYSIS OF TORSIONAL COMBINATION BANDS BUILT ON THE METHANOL OH STRETCH OVERTONE: $2\nu_1$, $2\nu_1+\nu_{12}$, AND $2\nu_1+2\nu_{12}$

DAVID RUEDA, O. V. BOYARKIN, AND T. R. RIZZO, *INSTITUT DE CHIMIE PHYSIQUE MOLECULAIRE, EPFL, CH - 1015 LAUSANNE*; ANDREI CHIROKOLAVA, INDRANATH MUKHOPADHYAY, AND DAVID S. PERRY, *DEPARTMENT OF CHEMISTRY, UNIVERSITY OF AKRON, AKRON, OHIO 44325*.

The spectrum of the first overtone OH stretch band ($2\nu_1$) in jet-cooled methanol has been measured using Infrared Laser Assisted Photofragment Spectroscopy (IRLAPS) and detailed assignments have been made. In addition to the torsional fundamental band ($\delta v_t=0$) it was possible to observe and assign the torsional combination band with ($\delta v_t=1$ and 2). These transitions are very weak but can be clearly resolved in the spectra. In total, 131 transitions reaching 19 different K levels in the $2\nu_1$ state have been fit to a global torsion-rotation Hamiltonian and the leading torsion-rotation parameters have been determined. Assignments for the much weaker and irregular torsional band structure for $3\nu_1+\nu_{12}$ and $3\nu_1+2\nu_{12}$ are in progress.