KINEMATIC EFFECTS IN INELASTIC COLLISIONS WITH $S_1$ GLYOXAL ($0^0$, $K' = 0$) IN CROSSED MOLECULAR BEAMS.

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Crossed beam inelastic scattering from $S_1$ glyoxal (CHO-CHO) collisions with cyclopropane $(C_3H_6)$, and cyclohexane $(C_6H_{12})$ are now added to an already extensive collection of collision partners. A laser is used to excite glyoxal to the $0^0$, $0 \geq J' \geq 10$, $K' = 0$ level of the $S_1$ $(^1A_u)$ state. Rotational excitation with resolution of K states is monitored by dispersed fluorescence. Relative cross sections are extracted from the inelastic scattering spectrum with a spectral fitting program. Competition between rotational inelastic scattering and rovibrational inelastic scattering to $\nu_7$, the low frequency torsional mode, becomes particularly interesting where equal amounts of rotational and rovibrational energy is transferred. The inelastic scattering spectra and relative cross sections of cyclopropane and cyclohexane are almost identical to argon and krypton, respectively. This demonstrates that inelastic scattering is dominated by kinematics rather than the interaction potential of the collision pair.