THE EFFECT OF REDUCED MASS ON CROSSED BEAM ROVIBRATIONAL ENERGY TRANSFER FROM S_1 GLYOXAL (0^0, $K' = 0$)

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Energy transfer from S_1 glyoxal (CHO-CHO) in collision with additional target gases is now added to a list of collision partners (H_2, D_2, He, Kr, and C_6H_{12}) previously presented. A laser is used to pump glyoxal to the $0^0, 0 \leq J' \leq 10$ $K' = 0$ level of the S_1 (^1A_u) state. Rotational excitation with resolution of K states can be observed in competition with rovibrational energy transfer to the lowest frequency mode, ν_7 (also seen with K state resolution). Relative cross sections are obtained from computer simulations of the observed inelastic scattering fluorescence spectrum. A more complete picture of the relationship between rovibrational energy transfer and the reduced mass of the collision partner will be presented. These results can also be used to further establish benchmarks for the 3-dimensional quantal scattering model that has so successfully been used with past glyoxal energy transfer studies[a].

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[a]G.-J. Kroes, R.P.H. Rettschnick, and D.C. Clary, *Chem. Phys.* **148**, 359 (1990).