VIBRONIC COUPLING IN EXCITED STATES OF ACETONE

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Photoelectron spectroscopy of Rydberg states of acetone-h_6 and -d_6 populated by two- or three-photon excitation has been employed to unravel the vibronic description of excited-state levels. For the 3p Rydberg states vibronic transitions have been reanalysed, leading to various reassignments and the observation of hitherto non-reported transitions. In addition, several ionic vibrational frequencies could be determined. At higher excitation energies previously identified, and in the present study newly identified, members of two Rydberg series have been characterised. The ns Rydberg series was explored up to the 8s state, the nd series up to the 7d state. Based upon the unambiguous assignments of vibronic character that we obtain for excited-state levels, various valence-Rydberg and Rydberg-Rydberg vibronic coupling pathways come to light and are analysed.