ROTATIONALLY RESOLVED SPECTROSCOPY OF THE ELECTRONICALLY EXCITED C AND D STATES OF ArXe AND KrXe

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Rotationally resolved (1+1') resonance-enhanced two-photon ionization spectra of the D and C ← X 0+ band systems of several isotopomers of ArXe and KrXe were recorded using a narrow-bandwidth VUV laser system at a resolution of 0.01 cm−1 in the wave number range from 77000 cm−1 to 77400 cm−1. The analysis of the rotational structures enabled the characterization of the dissociation of the Ω = 1 states of ArXe and KrXe. In the case of Rg129Xe and Rg131Xe (Rg=Ar, Kr), the hyperfine structure could also be resolved and provided new information on these states, and on the nature of the perturbations. Model potentials for the perturbing and perturbed excited states were constructed in an attempt to rationalize the spectroscopic data. The spectra of the C and D states of ArXe and KrXe reveal strong perturbations, and are subject to slow predissociation.