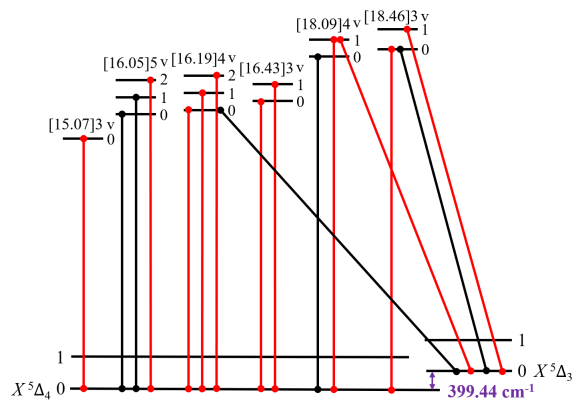


## ELECTRONIC STRUCTURE OF RuO

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The laser-induced fluorescence (LIF) excitation spectra of jet-cooled ruthenium monoxide (RuO) molecule in the gas phase have been investigated in the range of 13,800 to 19,250  $\text{cm}^{-1}$ . As shown in the figure, a total of sixteen vibronic bands were experimentally observed and grouped into the transition systems from the ground  $X^5\Delta_4$  and  $X^5\Delta_3$  states to six excited electronic states, labeled as  $[15.07]3 - X^5\Delta_4$ ,  $[16.05]5 - X^5\Delta_4$ ,  $[16.43]3 - X^5\Delta_4$ ,  $[16.19]4 - X^5\Delta_{4,3}$ ,  $[18.09]4 - X^5\Delta_{4,3}$ ,  $[18.46]3 - X^5\Delta_{4,3}$ . The spin-orbit splitting and the rotational constants in the lower and upper states were obtained accurately by the rotationally and isotopically resolved LIF spectra. In addition, the single-vibronic-level (SVL) emission spectra from the excited states were recorded, and the vibrational constants in the ground  $X^5\Delta_4$  and  $X^5\Delta_3$  states were obtained. Our results are sufficiently reliable and accurate to guide spectroscopists on further studies of RuO molecule.