HIGH RESOLUTION LASER SPECTROSCOPY OF THE [16.0]5 - $X^5\Delta_4$ ELECTRONIC SYSTEM OF RUTHENIUM MONOXIDE

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At the 2021 ISMS conference, we presented a talk on the high resolution spectroscopy of the RuO molecule.[a] This talk was primarily about the observation of the seven isotopologues of ^{n}RuO (n= 104, 102, 101, 100, 99, 98, and 96) plus hyperfine structure resolved in the ^{101}RuO and ^{99}RuO isotopologues of the 2-0, 1-0, and 0-0 bands of the green [18.1]4 – $X^5\Delta_4$ and [18.1]3 – $X^5\Delta_3$ electronic transitions. Comparison was made to the earlier work of Wang et al.[b] We mentioned that future work would centre on the high resolution spectroscopy of the red [16.0]5 - $X^5\Delta_4$ electronic system. We will now report on the 2-0, 1-0, and 0-0 bands of this system plus our assignments of other spin-orbit transitions associated with this red system. The work has yielded the isotopologues listed above as well as resolved hyperfine structure for the ^{101}RuO and ^{99}RuO isotopologues. The observation of the extra spin-orbit transitions gives us the spin-orbit intervals for the ground and excited states. Results of our hyperfine analysis will be used to discuss the electronic configurations associated with both the red and the green electronic transitions.

[a] A.G. Adam, G.M. Chenard, C. Linton, and D.W. Tokaryk, http://hdl.handle.net/2142/111251.

[b] N. Wang, Y.W. Ng, and A.S.-C. Cheung, J. Phys. Chem. A, 117, 13279-13283, (2013).