HIGH RESOLUTION LASER SPECTROSCOPY OF RHODIUM MONOBROMIDE.

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The rhodium monobromide molecule, RhBr, has been created in our laser ablation pulsed jet apparatus by ablating a rhodium target rod in the presence of 1% CH_3Br seeded in He. A low-resolution survey spectrum from 415 to 850 nm indicated the presence of a number of bands belonging to RhBr. Thirteen of these band systems, mainly in the blue spectral region, have been recorded at high resolution with our cw dye laser. In addition, dispersed fluorescence spectra have been obtained for these bands. Not all of the bands have been fully analyzed to date, however, from those analyzed, the RhBr ground state has been determined to have Ω=2 consistent with the isovalent RhCl molecule which has a $^3\Pi_2$ ground state[a]. Vibrational and rotational analysis yields the following ground state parameters for the two isotopologues, $Rh^{79}Br$ and $Rh^{81}Br$: ω''=260 cm^{-1}, B$''(Rh^{79}Br)$=0.0655 cm^{-1}, and B$''(Rh^{81}Br)$=0.0646 cm^{-1}. Further ground and excited state parameters will be presented at the conference.

[a] S. .A. Shepard, A. G. Adam, R. Li, and W. J. Balfour *J. Mol. Spectrosc.* 234, 99-105 (2005)