HIGH RESOLUTION LASER SPECTROSCOPY OF RHODIUM MONOPHOSPHIDE

A. G. ADAM, L. E. DOWNIE, and M. E. SLANEY, *Chemistry Department, and Centre for Lasers, and Atomic, and Molecular Sciences, University of New Brunswick, Fredericton, NB, E3B 6E2*; and W. J. BALFOUR and R. LI, *Chemistry Department, University of Victoria, Victoria, BC, V8W 3P6*.

High resolution laser spectra of RhP have been acquired in the visible region of the spectrum. The molecules were produced by laser ablation of a rhodium target rod followed by reaction with 2% PH_3 seeded in He in a pulsed supersonic jet. At least three electronic transitions with extensive upper state vibrational progressions have been observed by laser-induced fluorescence between 420 nm and 510 nm. All the bands are degraded to longer wavelengths and have an R branch which rapidly forms a head and a more open P branch. First lines in the bands were seen allowing line assignments which are consistent with $^1\Sigma$ - $^1\Sigma$ transitions. Dispersed fluorescence from the bands give a ground state vibrational interval of approximately 507 cm^{-1} plus also indicate the presence of low-lying electronic states at 2454 cm^{-1} and 4691 cm^{-1}. Molecular constants for the excited and ground states will be presented.