

## CAVITY RING-DOWN LASER ABSORPTION SPECTROSCOPY OF YTTRIUM AND NICKEL MONOIODIDES

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The absorption spectra of yttrium and nickel monoiodides at wavelength between 445-510 nm have been investigated using the technique of laser vaporization/reaction with free-jet expansion and cavity ring-down laser absorption (CRLA) spectroscopy. Yttrium monoiodide molecule was produced by reacting laser-ablated yttrium or nickel atoms and methyl iodide seeded in helium. For the YI molecule, several bands of the  $D^1\Pi - X^1\Sigma^+$  transition were observed and vibrational levels were analyzed. For NiI, two new transition systems were recorded and analyzed, namely the  $[21.3] ^2\Delta_{5/2} - X^2\Delta_{5/2}$  and  $[21.9] ^2\Pi_{3/2} - X^2\Delta_{5/2}$  systems. Spectra of both  $^{58}\text{NiI}$  and  $^{60}\text{NiI}$  isotopic molecules were observed. Equilibrium molecular constants for both electronic states are reported and the equilibrium bond length was respectively determined to be 2.431 Å for the  $[21.3] ^2\Delta_{5/2}$  state and 2.481 Å for the  $[21.9] ^2\Pi_{3/2}$  state.