

HYPERFINE STRUCTURE IN THE PURE ROTATIONAL SPECTRA OF BISMUTH MONONITRIDE, BiN, AND BISMUTH MONOPHOSPHIDE, BiP

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The diatomic molecules BiN and BiP have been prepared using a laser ablation technique and studied by Fourier transform microwave spectroscopy, in the frequency range 7-22GHz. For BiN only the  $J = 1 - 0$  transition fell within this range. Transitions for the ground and first excited vibrational states have been observed for both Bi<sup>14</sup>N and Bi<sup>15</sup>N. For BiP, which has only one isotopomer, the transitions  $J' - J'' = 1 - 0, 2 - 1$  and  $3 - 2$  have been observed, but only for the ground vibrational state. Hyperfine structure has been observed for all nuclei in both molecules; the <sup>209</sup>Bi nuclear quadrupole coupling constants indicate that the electronic structures are similar for the two molecules. Improved bond lengths have been obtained for both molecules.