

HYPERFINE INTERACTIONS IN CrN AND MoN

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Pure rotational transitions of $^{52}\text{Cr}^{14}\text{N}$ and $^{98}\text{Mo}^{14}\text{N}$ radicals in their $X^4\Sigma^-$ state were recorded using a pump/probe microwave-optical double resonance (PPMODR) technique from which the hyperfine parameters of ^{14}N ($I = 1$) were precisely determined. In addition, the $(0, 0) A^4\Pi - X^4\Sigma^-$ band system of a ^{53}CrN molecular beam sample was re-recorded^{ab} from which the hyperfine parameters of ^{53}Cr ($I = 3/2$) were determined. A simple molecular orbital model is used to rationalise the newly determined hyperfine interactions for ^{53}Cr and ^{14}N in CrN and ^{14}N in MoN and the previously determined hyperfine interactions for other early transition metal mononitrides. An improved set of fine structure parameters for the CrN and MoN are determined.

^aW. J. Balfour, C. X. W. Qian, and C. Zhou *J. Chem. Phys.* **106**, 4383 (1997).

^bC. Zhou, W. J. Balfour, and C. X. W. Qian *J. Chem. Phys.* **107**, 4437 (1997).