THE PURE ROTATIONAL SPECTRA OF VN ($X\ ^3\Delta_r$) and VO ($X\ ^4\Sigma^-$)

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The pure rotational spectra of VN ($X\ ^3\Delta_r$) and VO ($X\ ^4\Sigma^-$) in their ground electronic states have been recorded in the frequency range 295-525 GHz. In each case, seven rotational transitions were measured. Fine structure and vanadium hyperfine splittings were resolved in these data. These radicals were produced by reacting gas-phase VCl_4 with N_2 (VN) or residual O_2 (VO) in an AC discharge. Rotational, fine, and hyperfine constants were determined. In particular, the hyperfine constants *a*, *b*, and *c* for VN have been established from a global fit to the spectra. The parameters obtained are in good agreement with previous studies.