

PURE ROTATIONAL SPECTRUM OF TiCl IN THE GROUND ELECTRONIC STATE

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Electronic spectra of TiCl have been studied for years by various spectroscopic methods. However, it is still not clear whether the ground state of TiCl is $^4\Phi_r$, which is assumed to be the case by the analogy of TiH and the results of *ab initio* calculations. In this study, we have detected pure rotational spectra of TiCl for four spin components by using a submillimeter-wave spectrometer with a combination of frequency and discharge modulations at Ibaraki University. TiCl is generated in a DC glow discharge of a gas mixture of TiCl_4 (~ 1 mTorr) and Ar buffer (~ 80 mTorr). Discharge current is 40 mA, and mainly the 440 GHz region is surveyed. We have obtained effective spectroscopic constants for all the spin-components for $v = 0$ that are consistent with the previous FT results. Our analysis will provide very accurate structural information on the ground electronic state of this radical.