MICROWAVE SPECTROSCOPY OF PLATINUM MONOCYANIDE, PtCN

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The rotational spectrum of platinum monocyanide, PtCN, was observed by employing a source-modulation microwave spectrometer. The PtCN species was generated in a dc glow discharge through the mixture of $CH_3CN$ and Ar by a sputtering reaction with a platinum sheet on a cathode. Paramagnetic lines were observed every 6GHz and assigned to three isotopomers, $^{194}$PtCN, $^{195}$PtCN, and $^{196}$PtCN. There was no $\Lambda$-type doubling, but hyperfine splitting due to $^{195}$Pt nucleous for $^{195}$PtCN. The hyperfine structure could be fitted to either $^2\Pi_{3/2}$ or $^2\Delta_{5/2}$ case(c) Hamiltonian within experimental error. The nuclear - spin interaction constant $C_I$ was derived to be around 0.2 MHz, which was one order of magnitude larger than that of $^{195}$PtCO ($C_I$ = 0.0242 MHz)[a]. This result implies that low-lying electronic states would exist comparatively near to the ground electronic state, as in the case of NiCN[bc].

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