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 Λ-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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