LABORATORY DETECTION OF $IZnCH_3$ (X^1A_1) : FURTHER EVIDENCE FOR ZINC INSERTION

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Millimeter-wave direct absorption techniques were used to record the pure rotational spectrum of $IZnCH_3$ (X^1A_1). This species was produced by the reaction of zinc vapor with ICH_3 in the presence of a DC discharge. Rotational transitions ranging from J = 109 $\rightarrow$ 108 to J = 122 $\rightarrow$ 121 were recorded for $I^{64}ZnCH_3$ and $I^{66}ZnCH_3$ in the frequency range of 250$-$290 GHz. The Ka = 0$-$4 components were measured for each transition, with the K-ladder structure and nuclear spin statistics indicative of a symmetric top. As with $HZnCH_3$ (X^1A_1), the detection of $IZnCH_3$ provides further evidence for a zinc insertion process.