THE PURE ROTATIONAL SPECTRUM OF TIS ($X^3\Delta_r$) IN ALL THREE SPIN COMPONENTS

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The pure rotational spectrum of TiS in the $X^3\Delta_r$ ground state has been measured using millimeter-wave direct absorption techniques. This species was created by the reaction of hydrogen sulfide gas with titanium vapor produced in a Broida oven which was modified to withstand the extreme temperatures required to melt this metal. Eight transitions have been recorded, each consisting of three spin components. No lambda-doubling was observed, as expected for a Δ state. The data were fit with a Hunds case(a) Hamiltonian and spectroscopic constants have been determined. The results from this study, as well as a comparison to past optical data will be presented.