

Abstract Submitted
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Acquisition and Analysis of Titanium Monoxide Spectra in Plasma A.C. WOODS, C.G. PARIGGER, University of Tennessee Space Institute, Tullahoma, TN — The recent use of titania (TiO_2) nanoparticles for thin-film production has raised interest in the environment and properties of Ti containing particles in plasma. As a precursor to TiO_2 in rapidly cooling plasma, the titanium monoxide (TiO) molecule provides insight into the environment in which TiO_2 nanoparticles are produced. The spectral transitions of the TiO molecule have long been studied and observed by astronomers. We discuss our efforts in the calculation of predicted spectra for the TiO γ ($A^3\Phi - X^3\Delta$), γ' ($B^3\Pi - X^3\Delta$), and E-X $\Delta v=0$ transitions as well as laser-induced breakdown spectroscopy (LIBS) as a technique for collecting time-resolved spectra. By nonlinear fitting to TiO molecular transitions measured in laser-induced plasma, computed spectra are used to infer the temperature of the observed TiO .

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