

Abstract Submitted
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Spectroscopic measurement of the titanium-helium van der Waals molecule: TiHe¹ NANCY QUIROS, NAIMA TARIQ, JONATHAN WEINSTEIN, University of Nevada — Atoms that are weakly bound by the van der Waals (vdW) interaction are known as van der Waals molecules. The existence and formation of vdW molecules is favorable at low temperatures due to their weak binding energy. We have used laser ablation and helium buffer gas cooling to create the exotic vdW diatomic molecule made of titanium (Ti) and helium (He). TiHe molecules were detected through laser-induced-fluorescence spectroscopy closely blue-detuned from the $a\ ^3F_2 \rightarrow y\ ^3F_3$ atomic Ti transition at 25227 cm^{-1} . Measurements of the binding energy of TiHe were obtained by studying its equilibrium thermodynamic properties. It is believed the molecules are formed from the constituent cold atoms through three-body recombination. Progress towards measuring the three-body recombination rate coefficient will be discussed.

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