THE GAS-PHASE SPECTROSCOPY STUDY OF ThN and ThN^+

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The thorium nitride sample was prepared by means of laser ablation of thorium metal in a pulsed supersonic expansion of He seeded with NH_3. Laser induced fluorescence and resonantly enhanced multiphoton ionization techniques were applied to study the spectroscopy of ThN molecule in gas phase for the first time. The ionization energy of ThN has been measured and the ground electronic state ThN^+ ion was probed with pulsed field ionization - zero electron kinetic energy technique. The high level ab initio calculation performed for both ThN and ThN^+ have shown good agreement with experimental data.