

## ZERO ELECTRON KINETIC ENERGY PULSED FIELD IONIZATION (ZEKE) SPECTROSCOPY OF ZnCH<sub>3</sub> AND MgCH<sub>3</sub>

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The two-color (1 + 1') REMPI and ZEKE spectra of the ZnCH<sub>3</sub> and MgCH<sub>3</sub> radicals have been obtained. The ZnCH<sub>3</sub> radicals were generated in a supersonic free jet expansion by ArF excimer photolysis of Zn(CH<sub>3</sub>)<sub>2</sub> while MgCH<sub>3</sub> was generated by ablation of a Mg rod in the presence of a methyl source, generally either Sn(CH<sub>3</sub>)<sub>4</sub> or CH<sub>3</sub>CN. The ZEKE spectra, taken via various intermediate vibronic levels of the  $\tilde{A}^2E$  state, are used to reveal the vibrational structure of the ZnCH<sub>3</sub> and MgCH<sub>3</sub> cations and to measure the adiabatic ionization energy for each radical. These radicals belong to the  $C_{3v}$  point group and are therefore subject to a Jahn-Teller interaction in the  $\tilde{A}$  state, which allows a broader range of vibrational states to be accessible in the LIF and REMPI experiments, thereby enabling access to a broader range of vibrational states for the ions in the ZEKE experiment. Vibrational frequencies and assignments of the ions will be reported.