

Abstract Submitted  
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**Towards Microwave Trapping of Cold Polar Molecules<sup>1</sup>** Y.-C. CHEN, C.-C. HSIEH, T.-S. KU, P. DWIVEDI, R. HO, Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan — We describe our progress on production and trapping of cold SrF molecules. Specifically, we generate the SrF molecules by laser ablation of its solid precursor. We use helium buffer gas cooling as the first cooling stage to cool molecules down to a few Kelvin. To guide the generated cold molecules to ultrahigh vacuum region for further spectroscopic studies and trapping, we are also developing the electrostatic guiding of molecules. The experimental results will be presented. For a second-stage cooling in order to cool molecules down to ultracold regime, we plan to perform the sympathetic cooling of molecules with ultracold cesium atoms in a microwave trap. We have succeeded to build a microwave trap based on a high-power microwave Fabry-Perot resonator. We can couple 1.4 kW power into the cavity with a coupling efficiency more than 80% under locked conditions. The trap depth for the absolute ground state of SrF molecules is 300mK. The design and performance as well as future improvements will be discussed in details.

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