

MILLIMETER-WAVE DETECTIONS OF LASER-ABLATED SALTS WITH A MINIATURE SPECTROMETER

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This presentation describes the application of a miniature millimeter-wave rotational spectrometer to the detection of laser-ablation products. The laboratory experiments we present are forerunners to possible future field- or space deployments. We focus on NaCl and KCl salts, which are interesting targets at the icy moons of the outer solar system. The laser-coupled spectrometer incorporates a collisional-cooling, pulsed carrier gas beam. We leverage the small size of the spectrometer cavity to probe the ablation product signal along the beam length. We find that the volatilized species are widely dispersed in the carrier-gas. Additionally, we present centimeter-wave rotational and mass spectroscopic measurements to help characterize the laser ablation process.