

# Molecular Dual-Comb Spectroscopy of Laser-Produced Plasmas

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Dual-comb spectroscopy (DCS) has been demonstrated in recent years to be a useful technique in the study of laser-produced plasmas. These plasmas are highly energized systems with dynamics occurring on microsecond timescales where excited ions and atomic species form molecules as the plasma cools. The ability to conduct temporally-resolved DCS measurements in absorption, while leveraging the technique's high spectral resolution and broad bandwidth, allows for a direct method to detect molecular formation within a plasma plume. We will present our recent results demonstrating the observation of diatomic oxide species within laser-produced plasmas and the analysis of molecular rovibrational absorption spectra alongside simultaneously measured atomic species.