

VUV FLUORESCENCE OF JET-COOLED WATER AS A VEHICLE FOR SATELLITE THRUSTER PLUME CHARACTERIZATION.

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A quantified characterization of a spacecraft's thruster plume is obtainable through measurements of fluorescence from the plume. Fluorescence in a plume is due to electronic excitation of a plume's molecular species, such as water and ammonia, from solar photons. For instance, electronic excitation of water with Lyman-alpha (121.6 nm) causes photodissociation to OH radical by following one of several possible pathways. One pathway leads to an electronically excited OH radical which fluoresces at 310 nm. Here, the emission spectra of H₂O excited at wavelengths ranging from 128-121 nm are presented and the role of temperature in fluorescence is discussed.