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Characterization and Application of Microplasma Devices for Ambient Mass Spectrometry and Surface Analysis JOSHUA SYMONDS, REUBEN GANN, FACUNDO FERNÁNDEZ, THOMAS ORLANDO, Georgia Institute of Technology — In ambient mass spectrometry, ionization sources with broad chemical compatibility, low fragmentation, and high reliability are one of the keys necessary to enable effective and rapid analysis of unknown samples. One such approach, employing a variety of ambient-pressure microplasma discharges, has demonstrated itself to be a promising technique with a variety of successful applications and results. This class of devices holds a competitive edge over alternative ambient ionization methods when cost and portability are a concern: microplasmas typically require only modest electrical power and minimal gas flows to operate. We have developed our own such devices and methods, and look more closely into the physical nature of what makes particular designs successful. We focus on the development of these devices to perform mass spectrometry imaging in tandem with optical microscope imaging of samples at ambient pressure. Additionally, we investigate the use of microplasma devices for production of VUV photons, another highly effective ionization source.

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