Abstract Submitted
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Time-resolved imaging of streamer formation inside bubble submerged in liquid[1] JANIS LAI, JOHN FOSTER, University of Michigan — Plasma-based liquid activation applications such as water purification rely heavily on optimizing production and transport of plasma-derived reactive species into liquid media. A 2-D plasma-in-liquid apparatus was used to study the plasma-liquid interface region and induced reactivity in aqueous solutions. In this work, ultra-high speed imaging (ns exposure time) is employed to time-resolve streamer formation and propagation along the interface, while particle image velocimetry (PIV) is used to map the plasma-induced fluid flow field, which gives insight into the plasma-induced forces at the interface. Varying liquid parameters such as conductivity and surface tension impact how streamers propagate along the interface, and thus alter induced chemistry and fluid flow at the interface. Understanding discharge properties and fluid flow field in various liquids can inform future technologies on optimization of plasma-induced reactivity in liquid media.

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