

Abstract Submitted
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Interaction of DC Microhollow Cathode Discharge Plasma Micro Jet with Liquid Media WEIDONG ZHU, JOSE LOPEZ, St Peters College, KURT BECKER, Polytechnic University — There have been different approaches in studying the interaction between plasma and liquid, such as sustained plasmas in contact with liquids and pulsed electric discharge in liquids. Recently, we have discovered that stable plasma can be sustained within a gas cavity maintained inside liquid media. A prototype device with key dimensions in sub-millimeter range were operated successfully in de-ionized water and turbo molecular pump oil with ambient air, pure nitrogen or pure oxygen used as the operating gas. Hydrogen Peroxide production in de-ionized water with ambient air as the working gas is estimated to be about 80 mg/L after 15 minutes plasma jet-water interaction while energy consumption is only about 8-10 W. With the radicals readily generated and directly introduced into the liquid media, it could lead to applications such as in-liquid bio-waste treatment, bio-rich liquid modification, in-situ monitoring/sensing, and filtration of by-products from VOC treatment by plasma.

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