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Research Interests

- Interest 1: non-thermal plasma reactor analysis and design
- Interest 2: chemical reactions in gas-liquid plasma

Background Information

We conduct research in the area of non-thermal plasma, a type of plasma state where the energy of the free electrons is much higher than that of the background gas. When contacting the plasma with liquid water we generate a range of reactive oxygen species (ROS)(hydroxl radicals , atomic oxygen and hydrogen peroxide) and reactive nitrogen species (RNS) (when using air as the carrier gas we generate peroxynitrite, nitric acid, and other nitrogen oxides). These species are known to have anitmicrobial and antiviral activity.

How I Can Help a COVID-19 Related Project

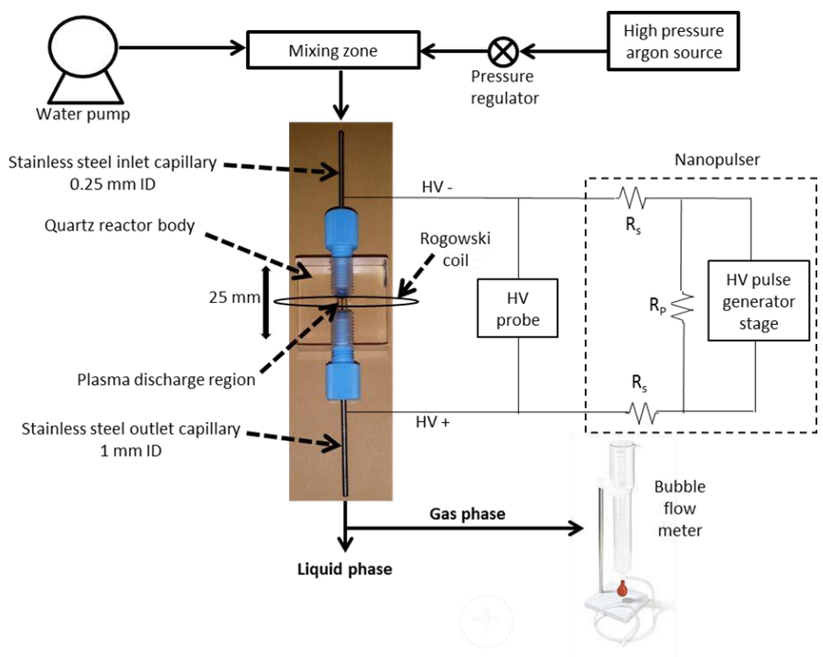
We are constructing small portable plasma reactor systems that can be used for disinfection and that require only electricity, air, and water to generate the ROS and RNS.

Recent publications describing our system and work.

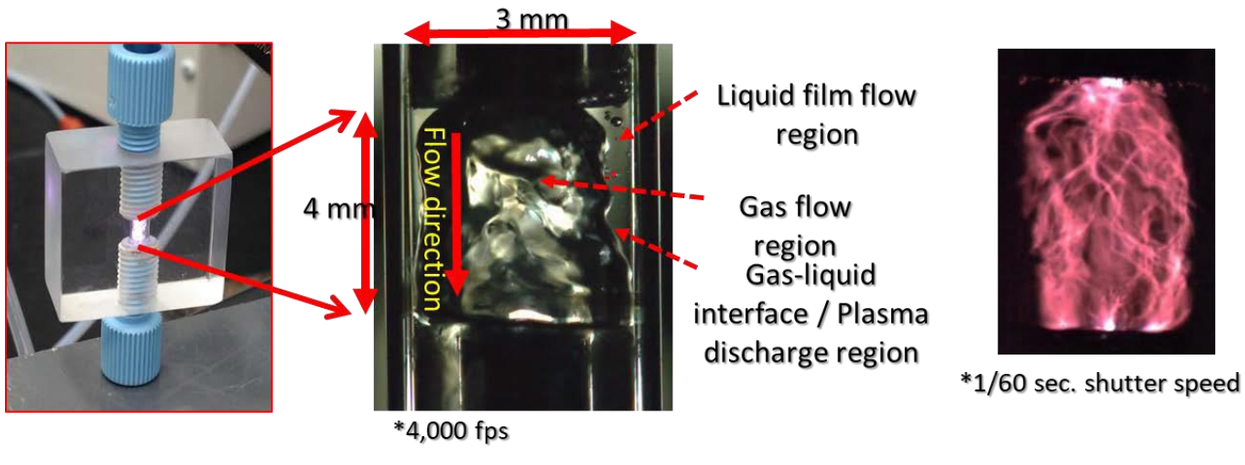
https://doi.org/10.1007/s11090-019-09981-w.
https://doi.org/10.1088/1361-6463/aaf132
https://doi.org/10.1088/1361-6463/ab431a

How Someone Can Help My COVID-19 Project

I am seeking collaborators who can assist in testing our reactor for destruction of viruses.



Additional Content



*1/60 sec. shutter speed