Investigation of reaction induced by atmospheric pressure plasma in contact with liquid

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In this presentation, I focused attention on droplet generationby plasma-liquid interaction and visualization of short reactive speciesinduced by plasma.
The droplet generation depends on optical emission from the discharge. Withincreasing concentration of NaCl aq., amount of droplet increased and distanceof scattered droplet became longer. Amount of droplet depends on theconcentration of NaCl aq. solution. These results indicate that dropletgeneration which depends on concentration of NaCl aq. is important factor fortransport of metal cation in solution to gas phase.
In addition, I try to visualize short reactive species induced by plasma.
Blue chemiluminescence was observed just below the plasma–liquid interface whenan atmospheric-pressure plasma was in contact with an alkaline solution inwhich luminol was dissolved. The shape of the chemiluminescent area was that ofa thin disk. The diameter of the disk was approximately the same as that of theplasma column, and the thickness was very thin.The chemiluminescence is considered to originate from the oxidation reaction ofluminol by $O_{2?}^{-}$ and/or OH. The experimental resultsreveal that the chemiluminescence of luminol is useful for real-timevisualization of plasma-induced short-lived species in liquids.

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