

Plasma jets! Where Thor meets 3D printers

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Plasma jet technology is more commonly seen in extremely high temperature settings, often under vacuum and are generally costly to use. Our research looks to contradict all these points by using a aerosol assisted low temperature plasma jet, that is generated in open atmosphere, is inexpensive both in equipment and usage costs. Plasma jet technology is becoming increasingly popular in advanced technologies and future materials. As technology and consumer needs develop, the demanding push for higher quality materials, that are tailored and functional must also move with the time.

We use a range of plasma based systems which are a radio-frequency pulsed plasma jet and a AC-driven dielectric-barrier discharge plasma jet. Our research group uses these atmospheric plasma jet printers to introduce aerosolized material into the plasma. One of our goals is to explore how we can exploit interactions between the plasma species and the material to give rise to desirable coating properties, such as porosity or density. We aim to provide an oversight of the diversity of projects being investigated using our plasma jet systems including the deposition of inorganic materials, colloids, nanoparticles, biomaterials and organic molecules.

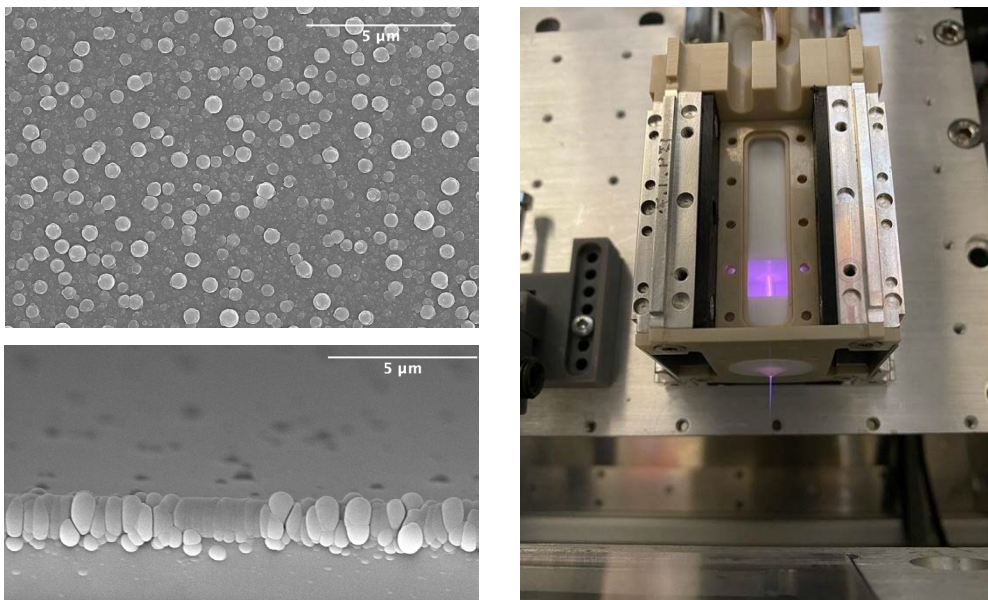


Figure: SEM images of capsular structures of hexamethyldisiloxane deposited atmospheric plasma jet printer and image of plasma jet printer (DBD system)