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Plasma polymers deposition by a novel atmospheric plasma jetAlessandro Patelli¹, Emanuele Verga Falzacappa², Alvisè Benedetti², Paolo Scopece³¹Universita' di Padova, Padova, Italy ²Università di Venezia, Venice, Italy ³Nadir srl,
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A wide range of coatings has been already developed using atmospheric plasma DBD systems starting from vapour or aerosol precursors. The DBD systems are usually limited in applications by their linear design and by the millimetre range gap between the electrodes. On the other side plasma torches are mostly design using arc technology and therefore are limited by the temperature, the process gas control and by the electrodes deposition.

In this work we will show how the development of a novel atmospheric plasma jet based on DBD design allows the deposition of a wide range of coatings at room temperature with a tight chemical processes control and with no surface metals poisoning.

In particular it will be shown the possibility to control the chemistry of the deposition process by siloxane deposition from ceramic to polymeric features on a PP film. Moreover the low temperature allows a uniform coating with no cracks. Ammine and carboxylic functionalization can be obtained by APTMS, APTES and MMA precursors on metal or polymeric substrates for biological applications.

Keywords

DBD plasma jet

silica

ammine and carboxylic functionalisation

low temperature