Abstract Submitted
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Plasma polymerization of 2-chloro-p-xylene to produce a crystalline plasma parylene C film[1] ISABEL C. ESTRADA-RAYGOZA, IBM, STEPHAN L. THAMBAN, LAWRENCE OVERZET, MATTHEW GOECKNER, The University of Texas at Dallas — The following work reports the study of the plasma polymerization of 2-chloro-p-xylene monomer to produce a plasma polymer film like Parylene C, a biocompatible polymer widely used in the medical field. This is the first example of a plasma polymer that presents a degree of crystallinity. Our data suggests that the film growth/polymerization of plasma deposited Parylene C is affected by both the adsorption of the monomer in the surface and the generation of precursors for polymerization by the plasma. Film deposition occurred mostly in areas exposed to ion bombardment, thus polymerization of the films is likely to be enhanced by ions but we cannot discard some small radical contribution. We used Fourier transform infrared spectroscopy, optical emission spectroscopy (OES) and an electron beam OES diagnostic tools to study the dissociation, excitation and ionization fragments produced in the plasma discharge. The main products of the monomer breakup are HCl, CH4, C2H2, H, H2, Cl, Cl2, CH, HCl+ and a mix of aromatic ions/radicals. By using a novel OES e-beam diagnostic we could track real time changes in the OES intensities of the excited species being produced and consumed in the plasma.

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