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Enhanced Chemisorption of Cu(hfac)$_2$ on Parylene Surface by N$_2$ Plasma Treatment S. PIMANPANG, P.-I WANG, D.-X. YE, J. S. JUNEJA, G.-C. WANG, T.-M. LU, Dept. of Physics, Rensselaer Polytechnic Inst., Troy, NY 12180 — The metallization of polymers has been intensively studied due to its wide industrial applications. We report a study of interfacial interaction of metalorganic Cu(hfac)$_2$ with the Parylene surface. Parylene is a low k dielectric polymer prepared by a chemical vapor deposition technique. The as-deposited Parylene surface is shown to be hydrophobic with a measured water droplet contact angle $\sim 72^\circ$. However, after the N$_2$ plasma treatment, the water droplet contact angle decreases to $\sim 40^\circ$ due to the formation of oxygen and nitrogen functional groups on the surface, as observed by x-ray photoelectron spectroscopy (XPS). These functional groups improve Cu(hfac)$_2$ chemisorption on the plasma treated Parylene surface. Further studies by XPS show that chemisorption of Cu(hfac)$_2$ is self-limiting up to 20 sec of Cu(hfac)$_2$ precursor exposure time. The enhancement of chemisorption of metalorganic precursors on the polymer surface is an important step for chemical vapor deposition or atomic layer deposition of metal. [a]Supported by Thai govt. fellowship (SP) and SRC (JSJ).

S. Pimanpang
Dept. of Physics, Rensselaer Polytechnic Inst., Troy, NY 12180

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