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Modification of amorphous carbon film surfaces by thermal grafting of alkenes monolayer HUSSEIN SABBAH, SOURAYA ABABOU-GIRARD, FRANCINE SOLAL, CHRISTIAN GODET, BRUNO FABRE, MARYLINE GUILLOUX-VIRY, ANDRE PERRIN, STEPHANIE DEPUTIER, PHYSIQUE DES ATOMES, LASERS, MOLECULES, SURFACES (PALMS, UMR 6627), UNIVERSITE RENNES 1 TEAM, SCIENCES CHIMIQUES DE RENNES (UMR 6226), UNIVERSITE DE RENNES 1 COLLABORATION — The integration of molecules and semiconductors opens new possibilities for large area devices in the fields of biochemical sensors, molecular electronics.This work aims at improving the control of the surface of amorphous carbon thin films, in order to optimize molecular grafting processes and investigate the electronic properties of molecular assemblies. Robust devices are expected from this covalent grafting, through strong C-C interface bonds. A quantitative comparison of thermally assisted gas phase and liquid phase processes using linear alkenes has been performed using X-ray photoelectron spectroscopy (XPS). In order to understand the grafting mechanisms and the a-C surface reactivity towards alkenes at different temperatures (160 - 300 $^{\circ}$C), surface coverage values are compared using a-C films, with different average C sp^3 / sp^2 hybridization, residual oxygen contamination, surface densities and surface energies, as obtained from XPS, grazing angle X-ray reflectivity and contact angle measurements.

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