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DEPO / Plasma - deposited coatings for optical, electronical and other functionalities

PE-CVD with organometallic precursors: contribution of aerosol assisted processes

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Abstract content

PE-CVD is widely used to deposit inorganic thin films. For example, a lot of different precursors (Tetraethyl orthosilicate - TEOS, Hexamethyldisiloxane - HMDSO, Hexamethyldisilane - HMDS, Tetramethylsilane - TMS, etc.) has been used for organosilicon or silica-like coatings. In contrast, only few studies are using organometallic precursors. Indeed, such molecules are generally unstable, pyrophoric and highly reactive with air and/or oxygen. Aerosol-assisted processes are able to avoid these problems. Indeed, diluted in organic solvents, it enables to inject droplets of organometallic precursor charged liquids. This contribution aims to report first results obtained with nickel- or zinc-based organometallic precursors. Using a pulsed injection of the liquid solution, it enables to deposit DLC matrices doped with Ni or Zn. Depending on the aerosol composition, the plasma behaviours as well as the film structures and properties will be discussed.