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Investigating gold deposition of HiPIMS and dcMS on Polystyrene, Poly-4-vinylpyridine and Polystyrenesulfonicacid

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High Power impulse magnetron sputtering (HIPIMS) is a novel industrial relevant deposition technique enabling thin metal layers being coated onto polymers with increased adhesion and density. Compared to conventional direct current magnetron sputtering, no pretreatment is required to achieve these properties. So far there is no report discussing the nucleation and growth process during HiPIMS deposition. In this study, the polymer templates polystyrene (PS), poly-4-vinylpyridin (P4VP) and polystyrene sulfonicacid (PSS) are studied. Even though the polymers are very similar in their structure, it is expected that the distinct different functional moiety influence the kinetics of the initial growth stages of the gold layer. Results of field emission scanning electron microscopy (FESEM), simultaneous in situ grazing-incidence small angle X-ray scattering (GISAXS) and grazing incidence wide angle X-ray scattering (GIWAXS) are presented.

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