



Contribution ID: 58

Type: Poster

In-situ investigation during gold HiPIMS deposition onto polymers

Friday, December 9, 2022 3:30 PM (1h 30m)

Gold deposition *via* high power impulse magnetron sputtering (HiPIMS) allows to coat thin metal layers on heat sensitive materials such as polymers allowing for increased adhesion and density. HiPIMS allows deposition at a lower total deposited thermal energy in comparison to conventional magnetron sputtering, but this energy is delivered in a very short pulse exhibiting very high power and ionization. The consequences for the nucleation and growth processes during HiPIMS deposition are not sufficiently known. Therefore, we investigate the morphology evolution of thin gold layers on four polymer templates, namely polystyrene (PS), polystyrene sulfonic acid (PSS) and poly-4-vinylpyridin (P4VP). These polymers show different functional moieties and thus are expected to influence the growth of the gold layer. First results of the in situ investigations combining grazing-incidence small angle X-ray scattering (GISAXS), grazing incidence wide angle X ray scattering (GIWAXS) will be presented.

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Session Classification: Poster Session

Track Classification: Material Science