

Abstract Submitted  
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**Electrostatically driven selective deposition of nanoparticles on chemically modified block copolymer patterns**<sup>1</sup> TOM WAGNER, Institute of Physical Chemistry RWTH Aachen, LARISA TSARKOVA, DWI - Leibniz Institute for Interactive Materials, ALEXANDER BOEKER, Institute of Physical Chemistry RWTH Aachen — Targeting applications in catalysis, circuitry, molecule-recognition and optoelectronics, we selectively assembled negatively charged gold nanoparticles (AuNPs) on microphase separated poly(styrene-*block*-2-vinylpyridine) (PS-*b*-P2VP) thin films by electrostatic interactions. Chemical crosslinking of PS-*b*-P2VP films results in positively charged P2VP domains (*q*P2VP). Control of charge density of the P2VP blocks is governed by varying the degree of crosslinking. To quantify the contribution of coulombic interactions we performed combinatorial studies including micro contact printing of negatively charged AuNPs onto *q*P2VP-homopolymer films as well as selective AuNP deposition on PS-*b*-*q*P2VP films by immersion. During manufacture, the chemical composition of precursors and final composites has been monitored by ATR-IR- and XPS-measurements whereas AFM- and FESEM-measurements revealed topographical features. XRR- and GISAXS-measurements provided information on the inner structure of the film. AuNP adsorption kinetics was followed by in-situ electrochemical impedance spectroscopy (EIS). Finally, the complementary analyses allowed for better understanding the fundamentals of electrostatically driven NP-adsorption on soft polymer surfaces.

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