

Abstract Submitted
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Reversible adsorption of Au nanoparticles on SiO₂/Si: an *in situ* ATR-IR study¹ D. ENDERS, KIP, Heidelberg Univ., T. NAGAO, NIMS, Tsukuba, Japan, A. PUCCI, KIP, Heidelberg Univ., T. NAKAYAMA, NIMS, Tsukuba, Japan — Adsorption and desorption of Au nanoparticles (AuNP) on the (aminopropyl)triethoxysilan (APTES) treated SiO₂/Si surface was monitored by *in situ* attenuated total reflection (ATR) infrared spectroscopy in combination with a liquid flow cell. With increasing the AuNP coverage at the surface, the absorption by water vibration was increased due to surface enhanced infrared absorption (SEIRA). Repulsive electrostatic forces between the incoming AuNP and the already adsorbed AuNP layer lead to saturation at submonolayer coverage of the surface. We clarified that the adsorption process can be described very well by a diffusion limited first-order Langmuir-kinetics model. Furthermore, we show that the AuNPs desorb from the surface when they are exposed to the solution of aminoethanethiol (AET).

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Tadaaki Nagao
NIMS, Tsukuba, Japan

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