

## Catechol-Functionalized Polysiloxane Nanocoating for Surface Enhanced Raman Scattering on a Grating Surface

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We demonstrate nanocoating on a corrugated surface with cyclosiloxane-based polymer. We assembled a catechol-functionalized polysiloxane nanofilm (*ca.* 37 nm) uniformly by dip coating on a one-dimensional grating surface that has a dimension of 500 nm pitch and 30 nm depth. Atomic force microscopy measurements revealed that the surface maintained its original shape even after assembling. Silver nanoparticles were also immobilized uniformly on the surface. The surface showed a remarkable surface enhanced Raman scattering signal, when the light polarization was set parallel to the grating vector (*p*-polarized light). The result indicates that silver nanoparticle arrays serve as a silver layer that enables incident light to couple with propagating surface plasmon excitation.

**Keywords** : Surface plasmon, Silver nanoparticle, Cyclosiloxane