

Nanotransfer Printing of Gold/Silver Nanopatterns on Glass Substrate

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Fabrication of small structures is usually based on photolithographic technique, but there is significant limitation of pattern size – wavelength of light, so for patterning of nanostructures it is necessary to use very short wavelengths as deep ultraviolet, which requires sophisticated equipment. Soft lithography technique allows making nanoscale patterns without complicated process. Soft lithography process uses elastomeric stamp with patterns, usually made by filling PDMS in the master chip, curing and peeling off PDMS stamp with patterns. Than PDMS stamp is used to print different structures on the sample surfaces.

In our work we use soft-lithographic method called “NanoTransfer Printing”, (nTP). This is nanoimprint method where particles are deposited on the PDMS stamp and then are transferred to the surface modified by Self-Assembled Monolayers (SAM) by printing. Firstly this method was introduced to prepare top-contact electrodes in Au/1,8-octanedithiol/GaAs junctions by Yueh-Lin Loo et al. in 2003.

This paper describes nTP method using SAM to fabricate Au nanopatterns on glass and PET surfaces. PDMS stamp was covered with gold and printed on glass samples that previously were functionalized with MP TES (APT ES) monolayer.