Direct transfer patterning of gold films with minimal processing steps

Abstract:
We were able to reduce the processing steps of transfer printing of thin gold films through prolonged evaporation times. We suspect the reduced evaporation rate to cause diffusion of small chain molecules (oligomers) in the PDMS (poly(dimethylsiloxane)) stamp to facilitate the transfer. Typical wrinkling of the PDMS surface was avoided by fabricating thin stamps of approximately 50 μm with polymer backing. The transferred films with a thickness of 20 nm showed enhanced edge resolution and a roughness of 1.31 nm root mean square. We were further able to fabricate 3D structures, indicating stability of the transferred films. Adhesion problems remain a limitation for contacting purposes.

Stichworte:
Soft lithography; Nano patterning; Poly(dimethylsilozane); Gold; Electrodes

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