Optical Lithography with Printed Metal Mask And a Simple Superhydrophobic Surface

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An optical patterning technique is presented in which a metal pattern on a mold is transferred onto a photoresist on a substrate and then the resist with the printed metal mask is flood-illuminated. When the metal mask is illuminated, the light passes only through the resist lenses that are formed in the transfer process and the focusing by these lenses results in a significant reduction in the feature size. The radius of curvature of these nanolenses can be decreased by increasing the pressure for the transfer, leading to decreased feature size. The technique is utilized to produce a simply-structured superhydrophobic surface.