

SUBSTRATE PRETREATMENT FOR REDUCING FILL TIME IN NANOIMPRINT LITHOGRAPHY

ABSTRACT

A nanoimprint lithography method includes disposing a pretreatment composition on a substrate to form a pretreatment coating. The pretreatment composition includes a polymerizable component. Discrete imprint resist portions are disposed on the pretreatment coating, with each discrete portion of the imprint resist covering a target area of the substrate. A composite polymerizable coating is formed on the substrate as each discrete portion of the imprint resist spreads beyond its target area. The composite polymerizable coating includes a mixture of the pretreatment composition and the imprint resist. The composite polymerizable coating is contacted with a template, and is polymerized to yield a composite polymeric layer on the substrate. The interfacial surface energy between the pretreatment composition and air exceeds the interfacial surface energy between the imprint resist and air or between at least a component of the imprint resist and air.

FIG. 1