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(54) **MICROCONTACT PRINTING ON SURFACES AND DERIVATIVE ARTICLES**

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

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Related U.S. Application Data

(63) Continuation-in-part of application No. 08/397,635, filed on Mar. 1, 1995, now abandoned, which is a continuation-in-part of application No. 08/131,841, filed on Oct. 4, 1993, now Pat. No. 5,512,131.

(51) **Int. Cl.**⁷ **B32B 9/04**; B41L 42/02

(52) **U.S. Cl.** **428/411.1**; 428/195; 101/368; 101/378; 101/379

(58) **Field of Search** 428/411.1, 195; 101/368, 376, 378, 379

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(57) **ABSTRACT**

Improved method of forming a patterned self-assembled monolayer on a surface and derivative articles are provided. According to one method, an elastomeric stamp is deformed during and/or prior to using the stamp to print a self-assembled molecular monolayer on a surface. According to another method, during monolayer printing the surface is contacted with a liquid that is immiscible with the molecular monolayer-forming species to effect controlled reactive spreading of the monolayer on the surface. Methods of printing self-assembled molecular monolayers on nonplanar surfaces and derivative articles are provided, as are methods of etching surfaces patterned with self-assembled monolayers, including methods of etching silicon. Optical elements including flexible diffraction gratings, mirrors, and lenses are provided, as are methods for forming optical devices and other articles using lithographic molding. A method for controlling the shape of a liquid on the surface of an article is provided, involving applying the liquid to a self-assembled monolayer on the surface, and controlling the electrical potential of the surface.

41 Claims, 13 Drawing Sheets

