

Publication

Surface patterned polymer micro-cantilever arrays for sensing

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Keywords Micro-cantilever, Polymer, Sensor, Injection molding, Nanoimprint lithography, Stamps, Mold Microinjection molding was employed to fabricate low-cost polymer cantilever arrays for sensor applications. Cantilevers with micrometer dimensions and aspect ratios as large as 10 were successfully manufactured from polymers, including polypropylene and polyvinylidenfluoride. The cantilevers perform similar to the established silicon cantilevers, with Q-factors in the range of 10-20. Static deflection of gold coated polymer cantilevers was characterized with heat cycling and self-assembled monolayer formation of mercaptohexanols. A hybrid mold concept allows easy modification of the surface topography, enabling customized mechanical properties of individual cantilevers. Combined with functionalization and surface patterning, the cantilever arrays are qualified for biomedical applications. (C) 2011 Elsevier B.V. All rights reserved.

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