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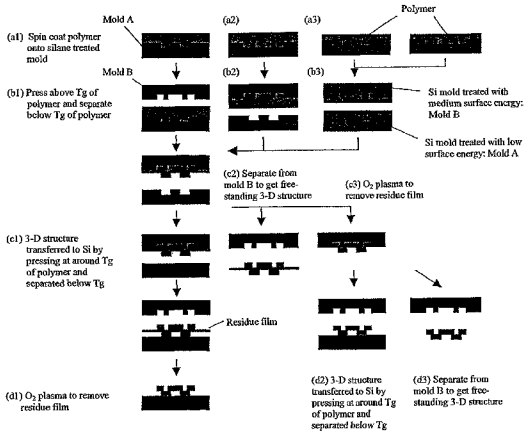
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[Continued on next page]

(54) Title: IMPRINTING OF SUPPORTED AND FREE-STANDING 3-D MICRO-OR NANO-STRUCTURES



(57) Abstract: The present invention is directed to micro- and nano-scale imprinting methods and the use of such methods to fabricate supported and/or free-standing 3-D micro- and/or nano-structures of polymeric, ceramic, and/or metallic materials. In some embodiments, a duo-mold approach is employed in the fabrication of these structures. In such methods, surface treatments are employed to impart differential surface energies to different molds and/or different parts of the mold(s). Such surface treatments permit the formation of three-dimensional (3-D) structures through imprinting and the transfer of such structures to a substrate. In some or other embodiments, such surface treatments and variation in glass transition temperature of the polymers used can facilitate separation of the 3-D structures from the molds to form free-standing micro- and/or nano-structures individually and/or in a film. In some or other embodiments, a "latch-on" assembly technique is utilized to form supported and/or free-standing stacked micro- and/or nano-structures that enable the assembly of polymers without a glass transition temperature and eliminate the heating required to assemble thermoplastic polymers.

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