Ordered porous polymer films prepared by breath figure templating

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The present research introduces a simple and novel strategy to produce multi-level ordered polymeric films. Multi-level ordering of aqueous droplets on a polymer solution is realized by the imposition of physical confinement via various shaped gratings. After drying of the solution, well-ordered multi-level structures were fabricated in the remaining film. The size of the grating structure and the lattice size of spontaneous hexagonally packed aqueous pores comprise two different length scales, thereby offering multi-level ordering. The present approach provides a new opportunity for lithography-free fabrication of complex hierarchical structures.