

Porous elastomer/MWNT films by organization of aqueous droplet

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Porous materials have been focused in diverse fields like membranes, optical waveguides and microsieve, etc. Particularly, porous polymeric materials have large specific surfaces, light weight, thermal and electrical insulated properties. With these considerable potential, they can be utilized as catalytic supports, filters and insulators. Here, we introduce a simple and convenient method for fabricating ordered porous structure by applying humid air to a polymer solution. Water droplets condensed from humid air spontaneously pack into hexagonal array. The size of the fabricated pores is easily controllable by adjusting various processing parameters such as the polymer concentration and humidity or flow rate of applied air. Elastomeric polymer solution, where Multi-Walled nanotubes are dispersed, is used by the following procedure. The present method produces hexagonally packed porous polymer/MWNT films which possess desirable flexibility, transparency and mechanical properties.