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Bicontinuous nanoporous block copolymer films prepared from a spherical-phase architecture EASAN SIVANIAH, PAUL ZAVALA, KEVIN CHANNON, SANNA NATARAJ, Cambridge University, SHAHEEN AL-MUHTASEB, Qatar University — In a recent discovery, we have found a way to make a bicontinuous nanoporous polymer network and subsequently transform this into interconnected mesoporous inorganic oxide sheets. Notably, these structures arise from a spherical block copolymer template. Nanoporous materials of such architecture, both polymeric and inorganic, are rare and also extremely useful. Importantly, the process is not restricted to a single block copolymer system or a narrow range of molecular weights or compositions. All of the process steps are scaleable, fast enough to be appropriate to continuous production methods, do not require vacuum technology, and can be achieved by solution processing. We discuss the process and its use to make PLEDs, photovoltaics and filtration membranes.

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