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**Nanoporous Thin Films Using Benzocyclobutene-Containing Diblock Copolymers** JULIE LEISTON-BELANGER, THOMAS RUSSELL, University of Massachusetts-Amherst, ERIC DROCKENMULLER, IBM Almaden Research Center, CRAIG HAWKER, University of California- Santa Barbara — Microphase separated diblock copolymer thin films are important in the fields of nanotemplating and data storage. Diblock copolymers containing vinyl benzocyclobutene (BCB) moieties were thermally cross-linked to afford chemically and thermally robust nanoporous thin films with hydroxy-functionalized nanopores. The ability for the morphology to resist solvation allows for a wider array of chemical modifications inside the nanoporous channels. Poly[(styrene-r-BCB)-b-lactic acid] (PSBCBLA) was synthesized by a combination of living free radical polymerization and ring-opening polymerization. The PSBCBPLA copolymer used was shown to phase separate into a cylindrical morphology, confirmed by SAXS, with cylinders oriented perpendicular to the substrate, as suggested by AFM and TEM studies. The PS-BCB block can be thermally cross-linked at temperatures from 200 C – 250 C and the PLA block can be easily removed with weak base to give accessible hydroxyl-functionalized nanopores.

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