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Ordered Nanostructured Carbon Generated from Pyrolyzed Polymer Precursors inside Anodic Aluminum Oxide Template JIUN-TAI CHEN, KYUSOON SHIN, JULIE LEISTON-BELANGER, MINGFU ZHANG, THOMAS RUSSELL, Polymer Science and Engineering Department, University of Massachusetts Amherst — Various carbon structures were generated by using polystyrene-block-polyacrylonitrile (PS-b-PAN) as carbon precursors in the nanopores of anodic aluminum oxide (AAO) membranes. PS-b-PAN block copolymers were drawn into nanopores of AAO by capillary force. By using different annealing temperatures, block copolymer nanotubes or nanorods can be generated. The morphologies of PS-b-PAN inside the nanopores were induced by structural frustration and interfacial interactions and were investigated by transmission electron microscopy. After stabilization and pyrolysis of the carbon precursors, the morphologies were retained and various carbon structures can be obtained. The carbon structures were found to be amorphous by Raman spectroscopy and x-ray diffraction.

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