

## Porous polyurethanes based on hyperbranched amino ethers of boric acid

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### Abstract

© The Royal Society of Chemistry. Novel polyurethanes with hierarchical supramolecular structure were synthesized via polyaddition reaction of amino ethers of boric acid and polyisocyanate. The structural features of amino ethers of boric acid were investigated using  $^{11}\text{B}$  NMR spectroscopy and dynamic light scattering. The changes of surface topology and pore size which were dependent on the hyperbranched structure of amino ethers of boric acid for synthesized polymers were characterized by atomic force microscopy and capillary flow porometry. Macromolecular packing in polyurethanes was analyzed from the swelling, water sorption, thermogravimetry, mechanical loss tangent, contact angle measurements, and tensile test results. According to the results of gas transport and water vapour testing, the synthesized polyurethanes exhibit the non-additive character of permeability changing.

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