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Green design of nanoporous materials and carbonaceous foams from polyfurfuryl alcohol and epoxidized linseed oil

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Abstract

The design of porous materials as well as carbonaceous foams was achieved through an easy route and a green pathway. A model approach is investigated by thermogravimetry: it consists in the utilization of a macromolecular template (MT) synthesized from stearic acid (SA) and epoxidized linseed oil (ELO), in association with polyfurfuryl alcohol (PFA) resin as carbon matrix precursor. Functional materials possessing diameter pores of 500 nm and 100 nm in average were obtained for a thermal treatment at 400°C. Another treatment at 800°C allows the generation of carbonaceous foams with dimensions size of about 200 to 500 nm.

Keywords: porous materials, carbon materials, polyfurfuryl alcohol, epoxidized linseed oil, green process.

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