

A facile route to fabricate the patterned 3D porous SiCN with different size windows from the close-packed polystyrene spheres template

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In this work, a very simple and effective approach was developed to fabricate the patterned three-dimensional (3D) macroporous SiCN material. In the whole procedure the two processes of the formation of the template with the close-packed polystyrene spheres and infiltrating the template by the commercial polymeric precursor which can obtain a high ceramic yield are completed under the action of the strong centrifugal force. Therefore, the whole period for the preparation of the patterned porous material was remarkably reduced compared with the capillary technology, what is better, the high-quality porous SiCN material can be prepared by the method. And another important and interesting thing in this study is that the porous SiCN material with different sized windows were be prepared on the basis of the different templates which were easily prepared through the change of the contact area between the neighboring polystyrene spheres caused by annealing for different intervals.