

Synthesis of zeolite-templated carbons for hydrogen storage applications

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Hydrogen storage has been a key bottle-neck in the actualization of hydrogen as an energy carrier. The new field of hydrogen storage in templated carbonaceous materials has excited many researchers and considerable effort is being directed in this field. Of the various nanocasting strategies for carbonaceous materials, hard templates such as zeolites have been of key research interest due to the many attractive properties associated with the resulting carbon replicas. Some of these properties are; presence of narrow and finely tuned micropores, high surface areas and the long range periodicity of the nanocasted carbon material. These characteristics have been reported to be highly attractive for enhancement of hydrogen storage hence the increasing attention for further research of these materials. The work presented herein will focus on the application of a commercially available zeolite 13X as a template for porous carbonaceous material. Future work will involve the use of unconventional templating agents, functionalization and metal loading in order to derive carbons with superior hydrogen storage properties.