

Synthesis of a hierarchically structured zeolite-templated carbon starting from fly ash-derived zeolite X

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A hierarchically structured zeolite derived from coal fly ash was used as a hard templating agent for the synthesis of a templated carbonaceous material. The samples were characterized using XRD, SEM, TEM, TGA, EDS and BET. The resulting carbon had the same morphological features as the parent zeolite and was composed of more than 96% carbon which confirmed that the zeolite template was successfully removed. It is important to emphasize that the hierarchically structured zeolite was produced without the need for the use of structure directing template as well as from a waste material. Therefore the process of synthesizing hierarchical carbon replicas starting from fly-ash derived zeolites presents a cost-effective alternative for producing carbonaceous material that are currently known to possess superior hydrogen storage properties.

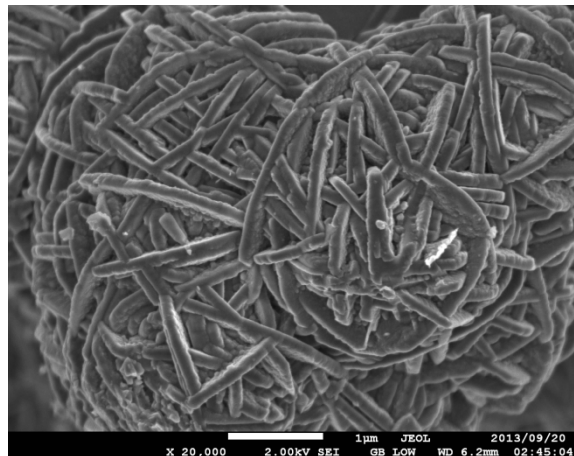


Figure 1: SEM image of a hierarchically structured fly ash-derived zeolite X.