

CARBON NANOTUBULES SYNTHESIS USING ALUMINA TEMPLATE

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Template synthesis of carbon nanostructures has attracted much attention in recent years. The advantages offered by this method are high density arrays, well-aligned carbon nanostructures with uniform diameters, thickness and length are produced. Carbon nanostructures prepared using this technique are of great interest as electrocatalyst supports in fuel cells, anodes in lithium ion batteries and other microelectronics devices. In this study, the template synthesis of carbon nanostructures formed in porous alumina template (AAO with a pore size of 200nm) by a liquid phase impregnation of the template with a polymer, polyfurfuryl alcohol, followed by carbonization is reported. The temperatures of exposure to furfuryl alcohol vapours were varied between 50 – 70 °C. The resultant carbon nanotubes formed were hollow with open ends having diameter ranging from 200 – 300nm which is in agreement with the pore size of the template used. The BET surface area was found to increase from 11.6 m²/g before pyrolysis to 90.2 m²/g after pyrolysis as a result of the formation of carbon nanotubes.