

Pulsed laser deposition of carbon nanodot arrays using porous alumina membranes as a mask

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Abstract

Carbon nanodot arrays (CNA) are grown on silicon substrates by using pulsed laser deposition and porous alumina membranes as a mask. The masks are grown directly on silicon substrates, thus allowing the fabrication of homogenous CNAs on macroscopic areas. Reproducible CNAs were grown using an argon background in the deposition chamber, at pressures up to 17 mTorr. Carbon plasma plumes were analysed to examine the properties of the ejected materials and surface analysis techniques were employed to characterize the resulting CNAs.