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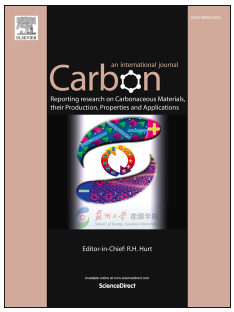

Deformation and strengthening mechanisms of a carbon nanotube reinforced aluminum composite

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Deformation and strengthening mechanisms of a carbon nanotube reinforced aluminum composite

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Abstract

The objective of this study was to characterize microstructure, texture, and deformation behavior of a carbon nanotube (CNT) reinforced aluminum composite via electron backscatter diffraction (EBSD), X-ray diffraction (XRD), scanning and transmission electron microscopy. The addition of 2.0 wt.% CNTs in a 2024Al alloy led to considerable grain refinement, with a bi-modal distribution of grain misorientation angles positioned at ~7° for low-angle grain boundaries and ~50° for high-angle grain boundaries. The CNTs were observed to be uniformly dispersed in the matrix while some CNT shortening occurred during ball milling.

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