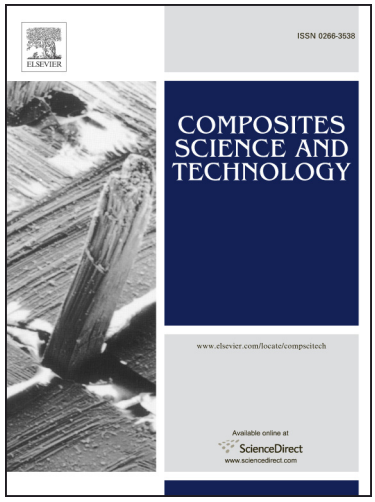

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Tuning the interfacial property of hierarchical composites by changing the grafting density of carbon nanotube using 1,3-propodiamine

Yuxin Li[a], Yibin Li*[a,b], Yujie Ding[a], Qingyu Peng[a], Chao Wang[a], Rongguo Wang[a,b], Thirumany Sritharan[c], Xiaodong He[a,b] and Shanyi Du[a,b]

[a]Center for Composite Materials and Structures, Harbin Institute of Technology, Harbin, P. R. China 150008

[b]National Key Laboratory of Science and Technology on Advanced Composites in Special Environments, Harbin Institute of Technology, Harbin, P. R. China, 150008

[c]School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798

*Corresponding author, Tel & Fax: +86 451 86402326, E-mail: liyibin@hit.edu.cn

Abstract

Carbon nanotubes (CNTs) were chemically grafted onto carbon fiber (CF) by 1,3-propodiamine bridging. The grafting density could be tuned by reaction time and concentration of 1,3-propodiamine. The fourier transform infrared spectra and x-ray photoelectron spectroscopy confirmed the chemical bonding nature between CNT and CF. The interfacial shear strength of the hierarchical composites is highly dependent on the grafting density, which could be two times that of as-received composite. The interfacial enhancement mechanism was also analyzed.

Keywords:A. Carbon fibers; A. Carbon nanotubes; A. hybrid composites; B. Interfacial strength; Chemical grafting