

Effects of N₂/H₂ plasma treatments on enhancement of neuronal cell affinity on single-walled carbon nanotube paper scaffolds

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The biocompatibility of materials used for biomedical applications depends on chemical composition, mechanical stiffness, surface energy, and roughness. The plasma treatment and etching process is a very important technology in the biomedical fields due to possibility of controlling the surface chemistry and properties of materials. In this work, N₂/H₂ plasma were treated on single-walled carbon nanotubes (SWCNTs) paper and characterization of treated SWCNTs paper was carried out. Also we investigated neurite outgrowth from SH-SY5Y on treated SWCNTs paper. The results indicated that N₂/H₂ plasma-modified SWCNTs paper enhanced neuronal cell adhesion, viability, neurite outgrowth and branching in vitro and exerted a positive role on the health of neural cells.