

## **Synthesis of vertically aligned carbon nanotubes on carbon fiber.**

### **ABSTRACT**

In spite of several researches to synthesize carbon nanotubes (CNTs) on carbon fiber (CF), most have obtained entangled nanotubes versus the aligned form. In this study, by controlling catalyst coating technique, vertically aligned CNT were grown on CF through chemical vapor deposition (CVD). Activated fiber surface originated from acid treatment, compact coverage of catalyst precursor via applying ultrasonication in appropriate solvent, followed by calcinating were effective parameters which resulted in growing bundles and vertically aligned CNT on CF. Ethanol and acetone were examined as solvent thereby spot catalyst coating was created from the former while film coverage produced from the later and resulted in distinctive CNT morphology.

**Keyword:** Carbon nanotube; Vertically aligned morphology; Chemical vapor deposition; Carbon fiber