

## **Electromagnetic characterization of carbon nanotube films and carpets by near-field evanescent microwave microscopy**

Electromagnetic characterization of carbon nanotube (CNT) films and carpets fabricated by thermal decomposition of silicon carbide and chemical vapor deposition has been performed. A near field microwave microscope is used to measure the local real and imaginary parts of the complex permittivity of CNT films and carpets through the frequency shift and the change in reciprocal quality factor between two extreme positions of an evanescent microwave probe-tip (in contact with the sample, and away from interaction with it). A theoretical two-point model is proposed to confirm experimental data. The effect of sintering process of CNTs and their uncapping have been studied also in terms of changes in its local complex permittivity.