

# Carbon Nanotubes: Properties and Applications

By Michael J. O'Connell

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## Carbon Nanotubes: Properties and Applications By Michael J. O'Connell

Since their discovery more than a decade ago, carbon nanotubes (CNTs) have held scientists and engineers in captive fascination, seated on the verge of enormous breakthroughs in areas such as medicine, electronics, and materials science, to name but a few. Taking a broad look at CNTs and the tools used to study them, **Carbon Nanotubes: Properties and Applications** comprises the efforts of leading nanotube researchers led by Michael O'Connell, protégé of the late father of nanotechnology, Richard Smalley. Each chapter is a self-contained treatise on various aspects of CNT synthesis, characterization, modification, and applications.

The book opens with a general introduction to the basic characteristics and the history of CNTs, followed by discussions on synthesis methods and the growth of “peapod” structures. Coverage then moves to electronic properties and band structures of single-wall nanotubes (SWNTs), magnetic properties, Raman spectroscopy of electronic and chemical behavior, and electromechanical properties and applications in NEMS (nanoelectromechanical systems). Turning to applications, the final sections of the book explore mechanical properties of SWNTs spun into fibers, sidewall functionalization in composites, and using SWNTs as tips for scanning probe microscopes.

Taking a fresh look at this burgeoning field, **Carbon Nanotubes: Properties and Applications** points the way toward making CNTs commercially viable.

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