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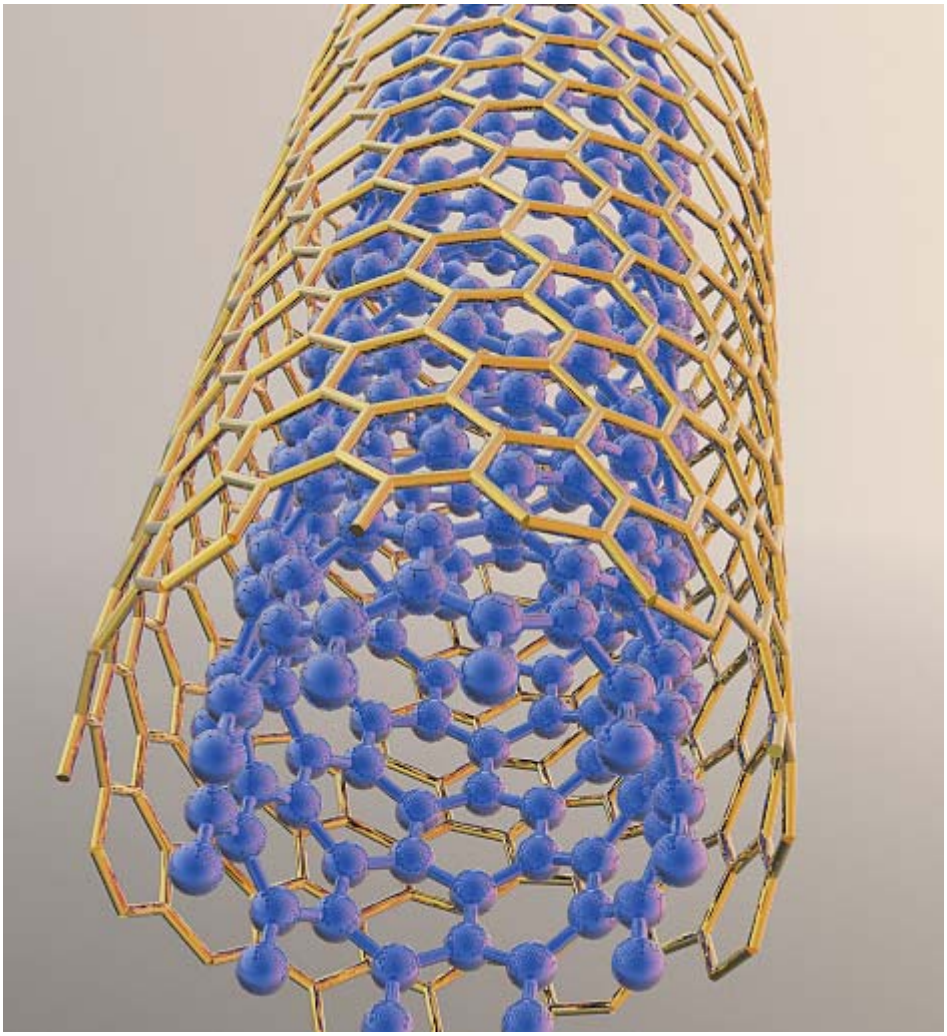
Carbon Tubes Fresh From California



Carbon nanotubes (CNT) — a new class of materials in the form of tiny tubes — were first discovered in the early 1990s. Single and multi-walled CNTs can have differing molecular structures and thicknesses of between 0.4 and around 100 nanometers. Since their discovery, CNTs have been the subject of intense research worldwide. Compared with steel, a multi-walled CNT is five times more rigid, yet its density is less by a factor of 5.5. Its electrical properties are also remarkable, with a current-carrying capacity about 1,000 times higher than that of comparable copper wires. The greatest challenge for commercial applications is the transfer of CNTs' different molecular properties to new materials that might be integrated into existing product manufacturing processes. Examples include high-strength reinforced plastics, wiring, electronic components and high-sensitivity gas sensors — all product area that Siemens researchers are involved in. For example, they are looking at CNT structures that can be used as absorber layers for gas analysis applications in sensor technology projects. The outstanding expertise regarding the synthesis and analysis of CNTs possessed by researchers at the Berkeley Sensor and Actuator Center (BSAC) of the University of California provided an exceptional foundation for the establishment of a long-term partnership. As a result, doctoral students on the Californian campus have been conducting research on behalf of Siemens into various types of CNT structures, which they pass on to Siemens for further study. The BSAC also benefits from this work, in that participating students and doctoral candidates gain experience with industrial research in the context of an international project.

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