

Tiny carbon nanotubes show big germ-fighting potential

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In nanoscience's version of a David-and-Goliath story, scientists in Connecticut are reporting the first direct evidence that carbon nanotubes have powerful antimicrobial activity, a discovery that could help fight the growing problem of antibiotic resistant infections. Their research on so-called single-walled carbon nanotubes (SWNTs) is scheduled for publication in the current (Aug. 28) issue of ACS' *Langmuir*.

Menachem Elimelech and colleagues point out that past research on the toxicity of SWNTs has focused on their adverse human and environmental effects. These microscopic cylinders of carbon — thousands of times smaller than a human hair — are one of the most promising raw materials for commercial and industrial applications of nanotechnology in the 21st century.

Their potential uses range from biosensors to new drug delivery systems.

“Surprisingly, however, no published studies exist on the direct interaction of SWNTs with microbes,” their report states. “Our experiments provide the first direct evidence that highly purified SWNTs exhibit strong antimicrobial activity and indicate that severe cell membrane damage by direct contact with SWNTs is the likely mechanism responsible for the toxicity to model bacteria. These observations point to the potential use of SWNTs as building blocks for antimicrobial materials.”

Source: American Chemical Society

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