

Dropping nano-anchor

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Touch the tines of a tuning fork and it goes silent. Scientists have faced a similar problem trying to harness the strength and conductivity of carbon nanotubes, regarded as material of choice for the next generation of everything from biosensors to pollution-trapping sponges.

Fifield reported the group's findings today at the American Chemical Society national meeting. In the decade since the synthesis of the first carbon nanotubes, researchers have attached molecules—intended to be the "feelers" for picking up chemical sensations and passing the information to the nanotube—using techniques that call for strong acidity and other harsh conditions that compromise the material's utility.

"Usually, people use an organic solution of anchors and incubate the nanotubes in the solution to deposit the anchors," Fifield said. "This method allows little control over the level of anchor loading. Our innovation is the use of supercritical fluids—carbon dioxide, with both liquid and gas properties—for anchor deposition."

Their technique allows them "to deposit anchors on a wide variety of nanotube sample types, including those not easily incubated in solution," Fifield said. "It also enables us to control how much of a nanotube surface is coated with molecules and the thickness of the coating."

Source: PNNL

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