Nanocar inventor named Top Nanotech Innovator

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Rice University chemist and nanocar inventor James Tour has been selected Innovator of the Year in Small Times magazine's Best of Small Tech Research Award competition. The awards recognize the best people, products and companies in nanotechnology, microelectromechanical systems (MEMS) and microsystems.

Tour is Chao Professor of Chemistry, professor of mechanical engineering and materials science, professor of computer science and director of the Carbon Nanotechnology Laboratory in Rice's Richard E. Smalley Institute for Nanoscale Science and Technology. He was recognized for his pioneering research in molecular self-assembly, including the development of single-molecule nanocars.

Tour's group unveiled its ultrasmall nanocars in October 2005. Measuring just 3-by-4 nanometers, nanocars have four tires, a rigid chassis and axles that spin freely and swivel independently of one another. About 20,000 nanocars can be parked side-by-side across the diameter of a human hair. The nanocars were imaged in rolling action in collaboration with his colleague Kevin Kelly, assistant professor of electrical and computer engineering.

In announcing the award, Small Times said Tour "is bringing molecular self-assembly to the point of commercial reality. His nanocar is a practical example of molecular manipulation, and his group is hard at work on more sophisticated machines."

Tour designed nanocars as a test system for new methods of molecular self-assembly. During the past year, his research team has extended the original concept, rolling out a motorized nanocar; a nanotruck with a cargo bay; a six-wheeled, three-axled NanoCaterpillar; a nanotrain; a nanobackhoe, complete with flexible extension arm; and an ultrasmall version of the nanocar dubbed the NanoCooper. They are currently working on a high-performance version of the motorized nanocar that contains twin solar-powered motors.

"We want to build things from the bottom-up, one molecule at a time, and in order to do that, we need to transport molecules from place to place," said Tour. "Just as cells use enzymes to assemble proteins and large molecules, we want to design synthetic transporters that are capable of doing much the same thing in non-biological environments."

Source: Rice University