

## Model leverages nano tethers

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Key to unleashing the possibilities of nanotechnology is finding ways to coax microscopic parts, machines and materials to self-assemble.

Researchers from the University of Michigan have shown in computer simulations that it is possible to cause structures like sheets, wires and tubes to spontaneously assemble by starting with nanoparticles that have long, tether-like molecules attached, then causing the tethers and nanoparticles to part.

The simulations suggest that the tether method could lead to a wider variety of self-assembled structures -- including spheres, rods, tubes, plates, tetrapods, and prisms -- than previous methods, according to the researchers.

The method could be used to manufacture microscopic materials molecule-by-molecule, including electronics, photonics, chemical and biological sensors, and structures that store energy.

The researchers are working on ways to precisely attach the tether molecules to nanoparticles. According to the simulations, the self-assembled structures depend critically on the number and location of tethers.

The method could be used in practical applications in two to five years, according to the researchers. The work appeared in the October 8, 2003 issue of *Nano Letters*.

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