

# Scientists create nanotech simulation tool

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Purdue University engineers say they've created a nanotech simulation tool that shows how current flows between silicon atoms and individual molecules.

The engineers say they believe their discovery will help researchers design "molecular electronic" devices for future computers and advanced sensors.

Molecular electronics could make it possible to manufacture hardware by "growing" circuits and devices in layers that could "self-assemble" in a manner similar to the growth of structures in living organisms.

They said devices for a variety of applications might be fabricated using techniques based on chemical attractions rather than the complex, expensive processes now used to etch electronic circuits.

The researchers say the new simulation tool can be used to see precisely how electrical conductivity changes depending on how molecules are connected to silicon.

"I believe we might be one of the first theorists who have created a tool to show how electricity is conducted between molecules and silicon at the atomic level," said Avik Ghosh, an electrical and computer engineering researcher at Purdue.

He and Geng-Chiau Liang, a postdoctoral research assistant in Purdue's School of Electrical and Computer Engineering, detail their research in

the current issue of the journal Physical Review Letters.

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