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NewsTrack - Science

New semiconductor technology created

CHAMPAIGN, Ill., Dec. 14 (UPI) -- U.S. scientists report developing technology that allows the integration of dissimilar classes of semiconductor devices on a single substrate.

Frederick Seitz Materials Research Laboratory scientists at the University of Illinois-Champaign say the new technology permits either a one- or three-dimensional layout.

The approach uses specialized rubber "stamps" with functional "inks" consisting of high performance semiconductor materials in the form of micro and nanoscale ribbons, wires, tubes and bars.

A printing operation delivers the materials to virtually any type of substrate, including lightweight, flexible plastic sheets. The researchers say circuits built in such a manner offer electrical and mechanical attributes that would be impossible to achieve using conventional, wafer-based approaches to electronics.

"Important new types of electronic systems will rely on the ability to mix and match wide ranging classes of devices in three dimensional configurations on unusual substrates," said Professor John Rogers. "The circuits enabled by such approaches will open up interesting application possibilities that lie beyond the scope of existing single-material, wafer-scale electronics."

Rogers and his co-authors explain the fabrication processes in the current issue of Science magazine.

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