

# SKoreans demonstrate spin-injected field effect transistor

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South Korean scientists said Friday they had demonstrated a spin-injected field effect transistor in a high-mobility InAs heterostructure.

Researchers at the state-run Korea Institute of Science and Technology (KIST) said the new transistor uses not only the on-off state of electric current but also electrons' spinning directions -- clockwise and counter-clockwise -- to handle information. It consumes less energy than existing semiconductors and opens the way for no-booting computers.

First conceptualized in the 1990s, "spin-injected field effect transistors" are seen as the next generation devices to replace the conventional [metal-oxide semiconductor transistors](#).

"The prototype spin transistor has paved the way for developing new computers that do not require the time-consuming booting process," Koo Hyun-Cheol, one of the researchers told AFP.

"It will also help develop devices which have memory and central processing units merged into a single chip," he said.

KIST has spent some eight million dollars since 2002 developing the transistor.

It has applied for patents in the United States, Japan and other countries for the technology.

The breakthrough was published in this week's issue of *Science* magazine.

More information: Control of Spin Precession in a Spin-Injected Field Effect Transistor, *Science* 18 September 2009: Vol. 325. no. 5947, pp. 1515 - 1518, [DOI: 10.1126/science.1173667](https://doi.org/10.1126/science.1173667)

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