



Trends in
**Applied Sciences
Research**

ISSN 1819-3579



Academic
Journals Inc.

www.academicjournals.com

Revolutionary Microchip Technology?

A team of scientists at Tyndall National Institute, UCC have made the world's first junctionless transistor even smaller. The transistor is the building block of the microchip. The development of the world's first junctionless transistor by Tyndall's Professor Jean-Pierre Colinge had already sparked off huge interest amongst the leading semiconductor manufacturers around the globe when it was published in Nature Nanotechnology.

The announcement was made as part of the programme of events taking place for Nanoweek which runs from 31st January to 4th February.

"The semiconductor industry was excited by the development of the junctionless transistor as it could represent simpler manufacturing processes of transistors. Considering that there are approximately 2 billion transistors on a single microprocessor, any improvement in the performance or structure of the transistor is always hugely significant for the semiconductor industry. Once we had developed the junctionless transistor our attention went towards making it even smaller. We have succeeded in making it at 50 nanometres, which is 20 times smaller than the transistors that were published in Nature Nanotechnology," explains Professor Jean-Pierre Colinge, Tyndall National Institute.

Today's electronic devices are power hungry and feature hungry. The electronics industry is looking for ways to pack more features into their devices while making them more energy efficient.

"The new smaller junctionless transistor is now 30% more energy efficient and outperforms current transistors on the market. Working with my colleagues in the Theory Group at Tyndall, we had predicted that the transistor could perform on a smaller scale and I am happy to say that we were correct in our predictions. It can be difficult to imagine the actual size of a transistor. However, if we look at a strand of our hair and imagine that the 50 nanometer junctionless transistor made in Tyndall is 2,000 times smaller, we can perhaps get a better idea of just what size scale we are working on," says Colinge.