Novel microchip unveiled by NTU-US team

By BRITTANY KHOO

LEAVING your mobile phone charger at home when you go on a two-week vacation may be the norm one day.

Scientists from Nanyang Technological University (NTU) and Rice University in the US have created a microchip that uses 30 times less power while running seven times faster than today’s best technology.

NTU and Rice University jointly validated the technology, dubbed PCMOS, via a joint institute that Rice University professor Krishna Palem founded in 2007, the Institute for Sustainable Nanoelectronics.

Revealing the results at an international conference in San Francisco yesterday, the Singapore-US team said that PCMOS is supported by chipmakers’ existing equipment, implying low industry entry costs.

The NTU-Rice University team plans to follow its proof-of-concept work on encryption with tests on microchips for cellphones, graphics cards and medical implants.

The microchip can also be quickly incorporated in electronic devices such as computer game consoles, lotteries and Internet security.

Team member and NTU teaching fellow Natalie Kong Zhi Hui said: “Our technology is a significant contributor towards environmental-friendliness – green computing, or probabilistic computing, with an extremely energy-aware attribute.

“This is due to the fact that this novel technology recycles noise.”

Intel has expressed interest in the technology and more manufacturers are expected to follow suit.

“This logic will prove extremely important because basic physics dictates that future transistor-based logic will need probabilistic methods,” said Shekhar Borkar, an Intel Fellow and director of Intel’s Microprocessor Technology.

The team sees PCMOS technology entering the consumer computing market in as little as four years and even presenting itself as a parallel to mainstream technology in the near future.

“We even hope this technology can create a new industry for Singapore,” said associate professor Yeo Kiat Seng, head of the division of circuits and systems at NTU’s School of Electrical and Electronic Engineering.