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Boffins pave way for optical transistor

By: [Tony Smith](#)

Posted: 31/05/2000 at 12:32 GMT

A pair of scientists at the University of Toronto have developed what appears to be the world's first silicon-based optical transistor - or at least a substance could be used to make one.

Essentially, the device traps light waves and controls their path in a way not dissimilar to how a semiconductor transistor controls the paths of the electrons that move through it.

Professors Sajeev John and Geoffrey Ozin - the former a physicist, the latter a materials chemist - combined their respective research efforts to produce what they call a "silicon photonic crystal". Details of the process will be published in this week's issue of *Nature*.

John, for one, was quick to claim major developments in microprocessor technology could emerge from their work.

"You might be able to just walk up to your computer and start talking to it and it'll start doing the operations for you. It'll recognize who you are, just like you're talking to one of your friends. And I think that's an exciting change. And the computation will be done with laser light," he told the Canadian Broadcasting Company.

Maybe, but it's important to stress the 'might' in John's comment. Producing a substance from which optical transistors may be formed isn't the same thing as making the transistors themselves. And even then further research will be needed in order to create first circuits, then full-scale chips, and finally to mass produce them.

Still, the boffins reckon the highest hurdle has now been leapt: "Going from the idea to developing an actual material has been the biggest bottleneck in the field up to

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now," said John. ®

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