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U of T makes computer chip breakthrough

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TORONTO - Researchers at the University of Toronto have found a way to use light instead of electricity inside computer chips. The discovery could revolutionize the computer and telecommunications industry.

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It may be small, but a sliver of silicon could mean big changes in the way computers work. It's called a silicon photonic crystal and it's revolutionary because of its ability to trap light.



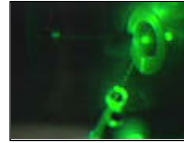
A sliver of silicon

That's something researchers around the world have been in a race to do for over a decade. But the team at the U of T blew past the competition.

"We have to move very quickly on it," says Sajeev John of the U of T research team. "We have major competitors around world."

The significance of the discovery

Today's computer chips use electrons to handle the information people type into them. They may



[Ron Charles reports for CBC TV.](#)

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be fast — but nothing is faster than light.

One day computer chips made with the team's material could use that trapped light to handle information which could mean faster, even smarter computers.

"You might be able to just walk up to your computer and start talking to it and it'll start doing the



Sajeev John

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," says John.

The new material is also cheap. A tiny piece costs pennies and could be used to make thousands of computer chips.

It's all the result of a unique collaboration between physicists and chemists. Even some who didn't think it was possible.


The scientists were brought together, some even lured back from abroad, by the Canadian Institute for Advanced Research. They won a race that saw big companies and big universities in the United States spending big money to try to get to this point first.

But even with that win, their challenge now is to actually make something with their new material, before anyone else does.

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