

New Si-based electro-optical modulator by Intel makes light work for chips

April 20 2004

A team from Intel Corp has made significant progress toward creating a practical Si-based electro-optical modulator, which can modulate light at 1 GHz. The speed data travels around the net could get a boost.

Scientists at the company have found a way to use silicon to move light around rather than just electrons.

The breakthrough could make it much easier to use light inside computer processors as well as make it cheaper to build fast computer networks.

Intel said that the technology should start showing up in devices by the end of the decade.

Silicon has become the material of choice for computer processors because it is cheap and because electrons move through it in ways that can be easily controlled and do useful work.

Now Intel researchers have found a way to do make silicon do almost the same thing with light at speeds almost 50 times faster than anyone has demonstrated before.

Writing in the journal Nature, Intel scientists Ansheng Liu and colleagues said they had built a silicon modulator that can send a billion pulses of light a second down fibre-optic cables.

The Intel researchers are confident that they can boost the pulsing speed

of their modulator tenfold by the end of the year.

The research could mean that silicon starts to be used in the heart of fibre-optic networks that have typically relied on exotic and expensive materials such as gallium arsenide and indium phosphide to move light pulses around.

"This is a significant step toward building optical devices that move data around inside a computer at the speed of light," said Pat Gelsinger, Intel technology boss, in a statement.

He said the breakthrough could help the net run faster, accelerate the speed of computer processors and perhaps lead to ultrahigh-definition displays.

An article has been published in [Nature](#) (A. Llu et al., *A high-speed silicon optical modulator based on a metal–oxide–semiconductor capacitor*, vol 427, p. 615)

Citation: New Si-based electro-optical modulator by Intel makes light work for chips (2004, April 20) retrieved 3 May 2024 from <https://phys.org/news/2004-04-si-based-electro-optical-modulator-intel-chips.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--