

# Glowing silicon: The key to big strides in the semiconductor industry

Optical connections will allow for faster, thicker processors (containing more transistors).

Technology for manufacturing general processing chips over the years has made great strides. We have created much more compact chips than before, while ensuring improved processing power through each version. However, the production of smaller chips is facing more and more obstacles. Besides the more complex production line requirements, the limitations of silicon materials are also one of the major causes.

We all know that optical connections will allow for faster, denser (containing transistors) processors to be created by fixing most thermal and energy problems, but silicon It is very difficult to emit light. To overcome this problem, researchers at Eindhoven University of Technology have successfully developed a material that they say is the 'first silicon alloy that can emit light'. This groundbreaking invention stems from the foundation of a mixture of silicon and germanium in a hexagonal structure, creating many 'band gap', or band gap energy (Band Gap) - which is the energy range. quantities in a solid material where no electronic state can exist, thus supporting the ability to emit stronger light.



## Testing luminous silicon

In fact, Eindhoven University of Technology has been pursuing this project for decades. Previously, the team also created hexagonal silicon in 2015. However, the ability to glow was not as expected. The results are only truly available after a series of experiments reducing the amount of impurities and defects.

Currently, the team still needs to produce lasers before they have the technology used in the chip, and there are still many tweaks before it can be applied on chips used in commercial electronic devices. trade. The research project continues to enter a new challenge: Apply technology in practice.

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