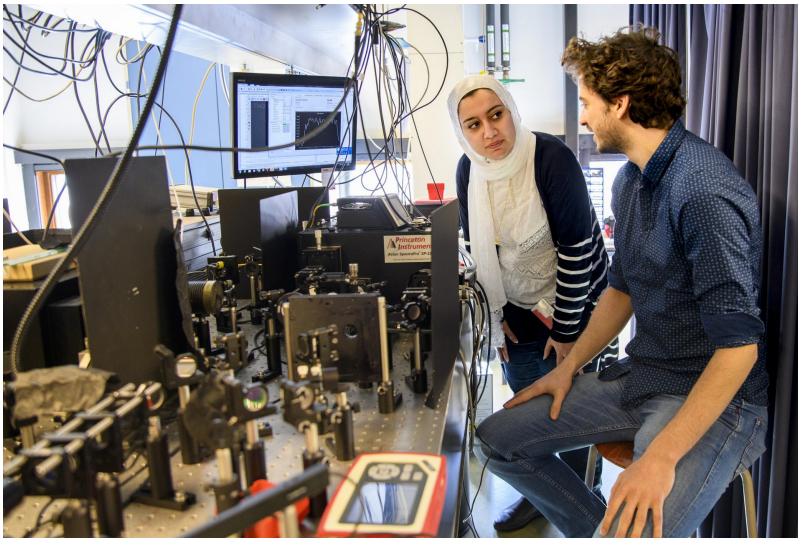


A Light-Emitting Breakthrough in Photonics?

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Researchers at the Eindhoven University of Technology (TU/e) claim to have developed the "Holy Grail" of the microelectronics industry-- light emissive silicon, key to creating the photonics-based computers of the future.



According to the researchers, current electronics are soon set to hit the ceiling. The limiting factor is heat, the result of the resistance electrons experience as they travel through the copper lines connecting the many transistors on a chip. Photons, the particles making light, can not only deliver more data, but can do so without producing heat.

Photonics require a basic component-- how can one produce light in chips? Semiconductors are primarily made of silicon, a material "extremely inefficient" at emitting light and, as such, scientists assumed it has no role in photonics. However the TU/e team, together with researchers from the universities of Jena, Linz and Munich, managed to combine silicon with germanium in a hexagonal structure able to emit light. The use of silicon is important, since it is much cheaper compared to alternative light-emitting semiconductors such as gallium arsenide and indium phosphide, not to mention easier to integrate in existing microchips.

What next for the research? Now focus shifts towards the integration of the hexagonal silicon in cubic silicon microelectronics, further refining the technology in order to make it more practical.

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