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CALIFORNIANS BUILD FIRST SILICON LASER

Scientists demonstrate a silicon waveguide laser that relies on the Raman effect.

“After years of frustration and failed attempts, scientists have finally found a way to make silicon lase. The breakthrough is important because it paves the way for integrating lasers and electronics together on the same silicon chip. Currently, the two are made separately, as today's semiconductor lasers are based on materials such as GaN and GaAs.”

“Now researchers from University of California at Los Angeles, US have brought the dream of unification one stage

closer by constructing the world's first silicon laser (Optics Express 12 21).”

“Their success hinges on taking a different approach to others in the field. While other researchers have obtained light emission (but not lasing) from silicon by either doping it with erbium or riddling it with tiny holes, Ozdal Boyraz and Bahram Jalali decided to investigate the possibility of using the Raman effect.”

“‘Our approach is fundamentally different,’ Jalali told Optics.org. ‘The advantage is that is that we don't need special impurities or nanostructures so the technology is 100% compatible with silicon chip manufacturing.’”

“‘One limitation of our approach is that the laser is optical pumped so it should not be viewed as a replacement for laser diodes, which are electrically pumped,’ said Jalali. ‘The silicon Raman laser should be viewed as a device that will extend the wavelength range of those lasers to regions where they cannot operate.’”