

# Photos of the Day: Miniaturizing Particle Acceleration

Matt Davenport, Stanford School of Engineering

Accelerators energize charged particles to accomplish a range of tasks from generating x-rays for medical imaging systems to unraveling the mysteries of matter.

They use electromagnetic waves to boost the energy of particles. Many conventional accelerators employ microwave radiation and bulky copper tubing to generate a wavy electric field. Particles surf these finely tuned waves, hitting swell after swell, and accelerating to higher and higher energies.

One of the ways the new device miniaturizes this process is by using a series of nanoscopic ravines etched into the chip by researchers at the Stanford Nanofabrication Facility (SNF). The SNF is a shared facility that provides researchers access to clean rooms and equipment to design, create, and characterize micro- and nano-scale devices.

Ph.D. candidates Edgar Peralta, right, and Ken Soong, left, analyze data from the desktop accelerator chip at SLAC. Peralta and Soong are first and second authors, respectively, of the Nature report. (Matt Beardsley/SLAC)

A computer simulation of the glass accelerator chip shows the accelerating (orange) and decelerating (blue) components of the electromagnetic waves. The glass slits are the tooth-like features on both sides of the central electron conduit. (Ben Cowan/Tech-X Corp.)

For more information visit <http://engineering.stanford.edu> [1].

[Click here to read the full article](#) [2].

**Source URL (retrieved on 03/06/2015 - 5:48pm):**

<http://www.wirelessdesignmag.com/news/2013/10/photos-day-miniaturizing-particle-acceleration?qt-blogs=0>

### Links:

[1] <http://engineering.stanford.edu>

[2] <http://www.wirelessdesignmag.com/news/2013/10/stanford-engineers-participate-%E2%80%98accelerator-chip%E2%80%99-project>