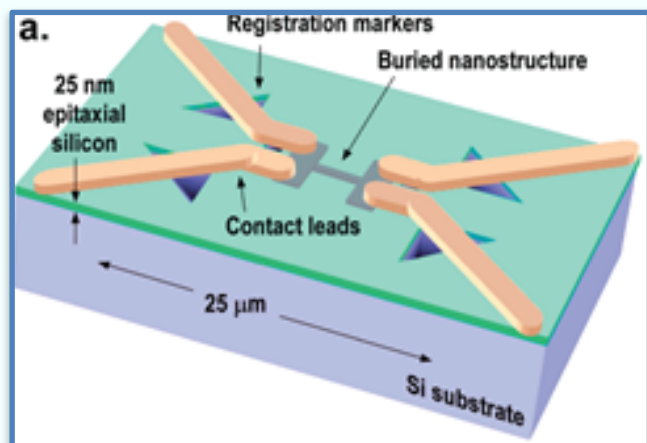




## Toward Atomic-Scale Device Fabrication in Silicon Using Scanning Probe Microscopy

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a. A  $90 \times 900 \text{ nm}^2$  quantum wire patterned by STM showing triangular registration markers etched into the silicon substrate.

We present a complete fabrication process for the creation of robust nano and atomic scale devices in silicon using a scanning tunneling microscope (STM). In particular we develop registration markers which, in combination with a custom designed STM-scanning electron microscope (SEM) system, solve one of the key fabrication problems connecting the STM-patterned buried phosphorus doped devices, fabricated in the ultrahigh vacuum environment, to the outside world. The first devices demonstrate the feasibility of this technology and confirm the presence of quantum confinement in devices as electron propagation is laterally constricted by STM patterning.

LINK TO FULL PAPER (SUBSCRIBERS ONLY):

<http://pubs.acs.org/doi/pdf/10.1021/nl048808v>