

Science & Technology

Science & Technology, November 2004

Silicon Laser Pulses with Life

“There have been many attempts, but no-one has been able to get silicon to lase before now,” says Bahram Jalali, an electrical engineer at the University of California, Los Angeles and his colleague, Ozdal Boyraz, have published their research in the latest edition of Optics Express.”

“To make a good laser, you need a material that can take an energy input and turn it into light energy in a regular rhythm. But silicon has always been problematic because it loses much of this energy as vibrations within its atomic lattice. Jalali and Boyraz's breakthrough makes a virtue of this, using the vibrations themselves to generate laser light. ‘Our

approach uses the natural atomic vibrations of silicon to create or amplify light,’ says Jalali.”

“But it will be a few years yet before laser beams are whizzing about inside your desktop computer. Rather than turning electricity directly into light, Jalali's silicon laser is powered by another laser. It's a common method of investigating new laser materials, but the jump to electricity will definitely have to be made before the silicon laser can be used in an optical computer, says Jalali. They also need to develop the laser into a self-contained component that can be incorporated on to a silicon chip.”