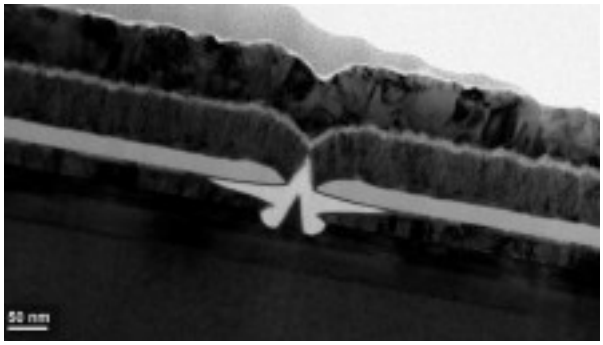
The MIT Microsystems Technology Laboratories may have developed a potential replacement to silicon transistors-- a transistor just 22nm in length made out of indium gallium arsenide (InGaAS).



The material, a compound semiconductor made out indium, gallium and arsenic, already has use in high-power and high-frequency electronics as well as a detector material in optical fibre communications.

What makes the MIT development significant is size-- at 22nm (the size of 9 strands of human DNA), the InGaAS transistor points towards a future of more densely packed (and higher performance) processors.

InGaAs is also a potential replacement to silicon, whose performance degrades on the nanometer scale. Co-developer and MIT professor Jesús del Alamo even claims it "promises to take Moore's Law beyond the reach of silicon."

Moore's Law is the famous prediction by Intel founder Gordon Moore saying the number of transistors on microchips will double every 2 years.

Following the presentation of results at the International Electron Devices Meeting, the MIT team will work on improving electrical performance (and therefore speed) of the transistor, before attempting to shrink its size further-- to below 10nm in gate length.

Go Tiny Compound Semiconductor Transistor Could Challenge Silicon Dominance (MIT News)