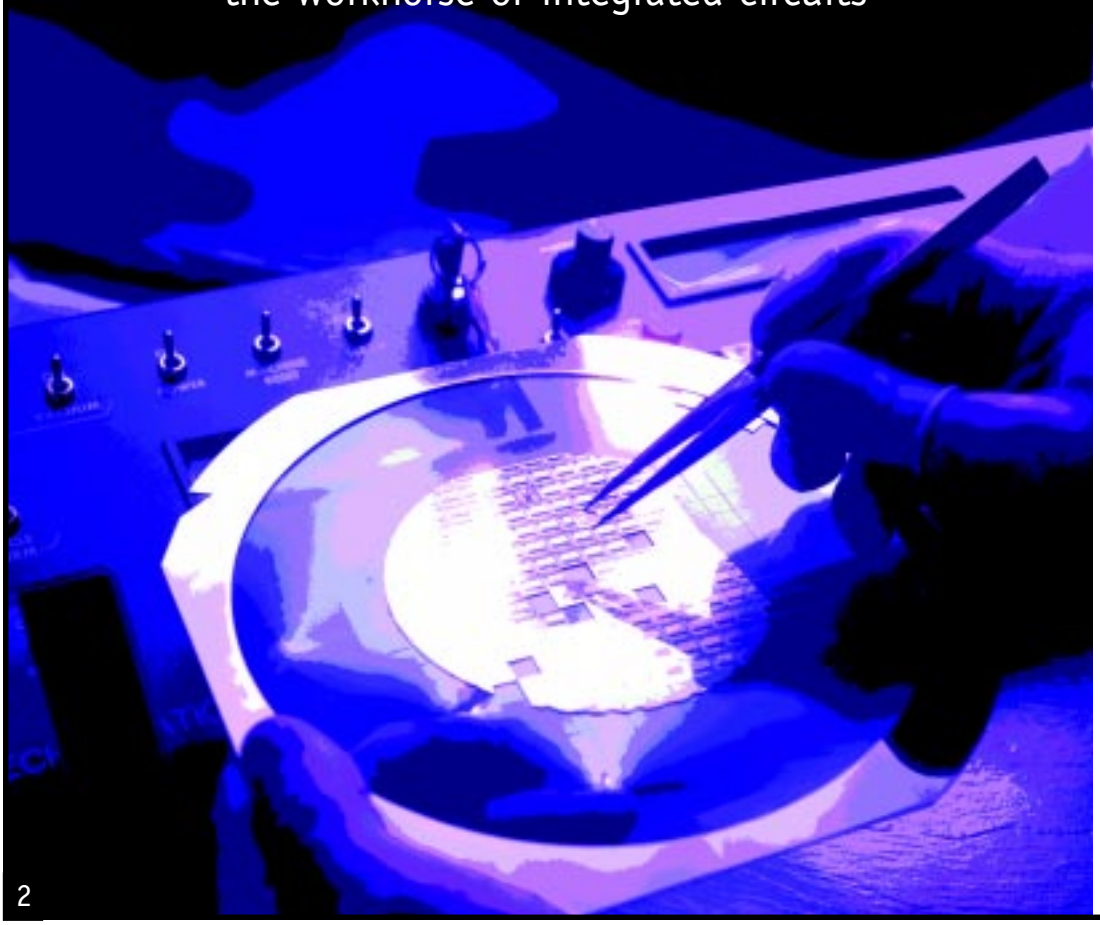
New Semiconductor Breakthrough: Faster Electroni

Resonant Tunneling Diode (RTD) Research

RTD may replace the mighty transistor as the workhorse of integrated circuits



Warfighters will benefit from AFOSR supported research that shows promise to make C3I equipment more reliable and powerful while being lighter and using less power.

AFOSR pioneered research into resonant tunneling diodes by supporting efforts at the University of Texas at Dallas, the University of Delaware and with a Texas Instruments division (now Raytheon) in 1994. The success of the research led to greater funding through the Defense Advanced Research Projects Agency (DARPA).

The new device, called a resonant tunneling diode (RTD), may replace the mighty transistor as the workhorse of integrated circuits when it becomes impossible to make transistors any smaller

Combined with transistors on integrated circuits, tunnel diode semiconductor devices will enable faster electronic circuits that use less power. As a result of the research, mass production of tunneling diodes on silicon wafers is now possible. Among the potential payoffs are:

- Improved battlespace awareness, battlespace management, and decision making with advanced communications networks capable of handling high-data transfer rates.