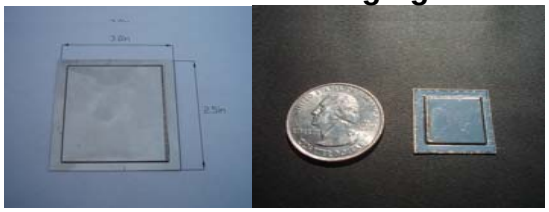
Bulk Titanium MEMS

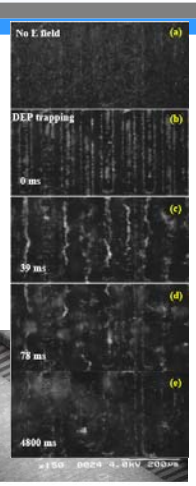
Noel C. MacDonald (PI)

Bulk Ti MEMS

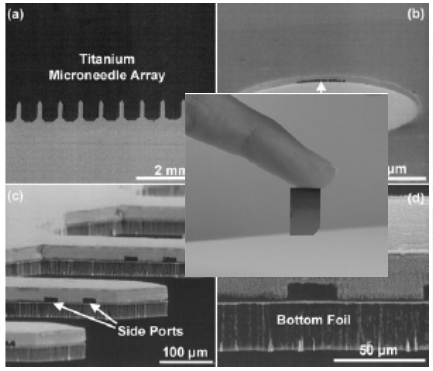
- Ti Sheet Metal to Ti Polished Wafers
- Developed Laser Welding Technique for Wafer-level Hermetic Packaging
- Developed Low-loss RFMEMS Platform and Relays
- Developed Bio-compatible Micro-needles
- Developed Nano-Structured Titania (NST) for Gas Sensing
- NST-based Solution for Semiconductor Chip Cooling

Hermetic Packaging

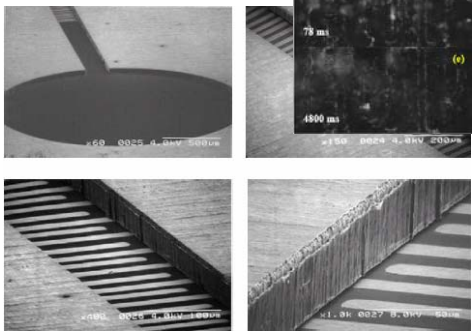




Micro-needles

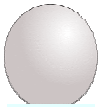


Microfluidics

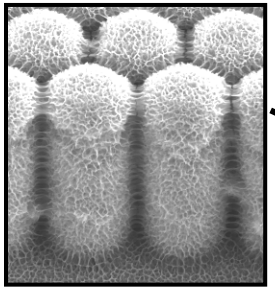


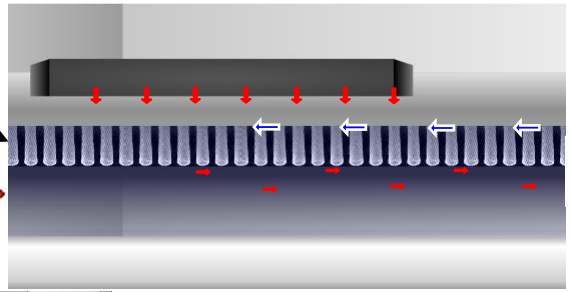
Ti Sheet

Ti Wafer

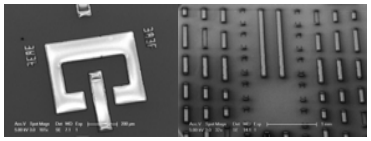


NST-based Cooling Solution

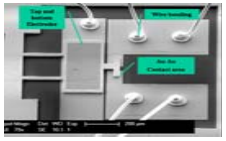




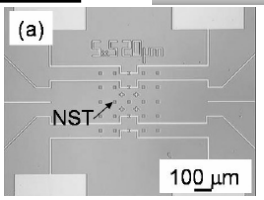
RFMEMS Platform

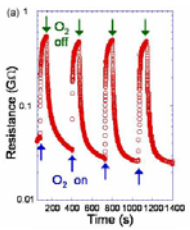


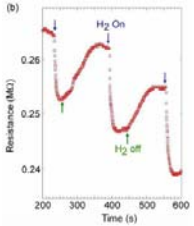
Bulk Ti Relay



NST Gas Sensing







Approved for Public Release, Distribution Unlimited