



SRI International Lightning Talk

IARPA Proposer's Day Meeting

May 7, 2024

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SRI International: Research Divisions



Information & Computing Sciences



- + AI & Machine Learning
- + Cybersecurity & Trusted Systems
- + Speech and Audio Analytics
- + Computer Vision Technologies

Education



- + Education Policy
- + Assessments
- + Supporting Children at Risk
- + Technology and Learning

Advanced Technology Systems



- + Quantum
- + Robotics & Automation
- + Space Systems
- + C4ISR
- + Sensors

Biosciences



- + Accelerated Drug Discovery
- + Novel Therapeutic Approaches
- + Brain Sciences
- + Preclinical and Clinical Development

Integrated Systems & Solutions



- + Advanced Imaging Systems
- + Intelligent Systems
- + Microcircuit Emulation
- + Video Test and Measurement

Commercialization Group

- + SRI Ventures
- + Global Partnerships
- + Product Transition
- + Innovation Services (CISP & NSIC)

Future Concepts division, PARC Campus (since May 2023)

- + Hardware Research and Technology Lab
- + Intelligent Systems Lab
- + Cleanroom Services: Thin Film Electronics and Optoelectronic Devices Fab

SRI International: Strategic Areas



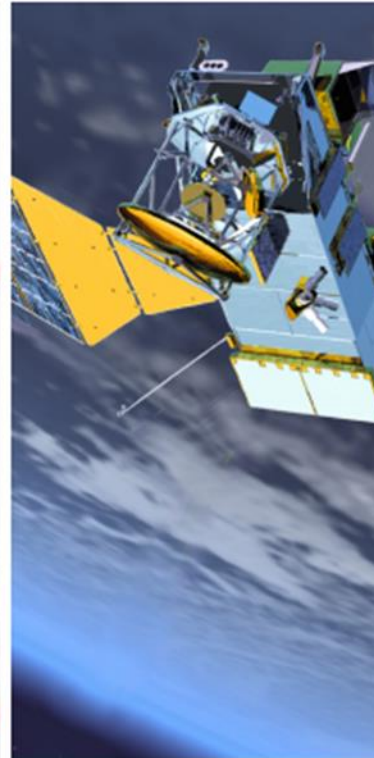
Climate, energy
& sustainability



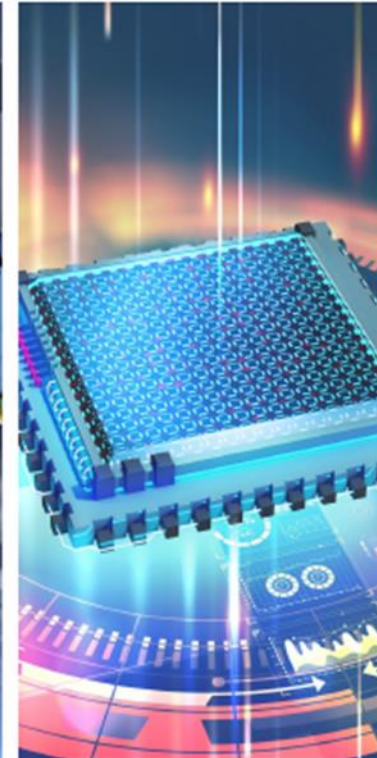
Personalized /
precision medicine



Human machine
collaboration



Space

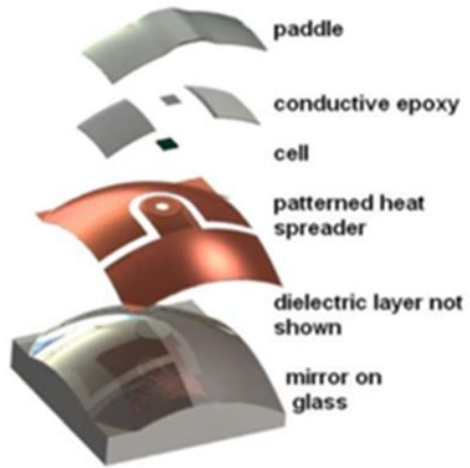


Quantum



Future of work
and education

SRI Solar PV Experience and Expertise



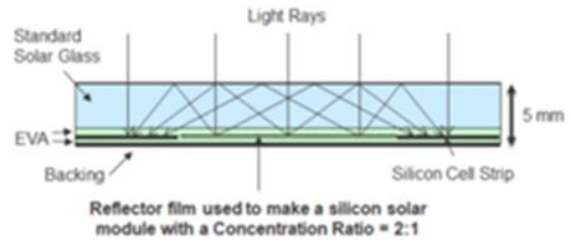
*PARC HCPV Solid
Micro-concentrator Unit Cell*



*Solid HCPV
Micro-concentrator Tile*



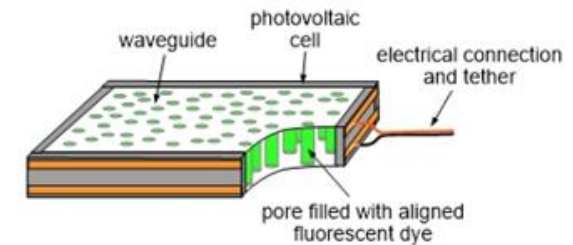
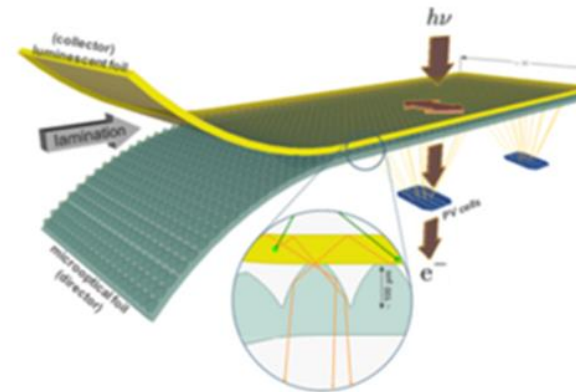
Solfocus Startup Incubation at PARC



PARC/VectorSun ETIR LCPV Concentrator

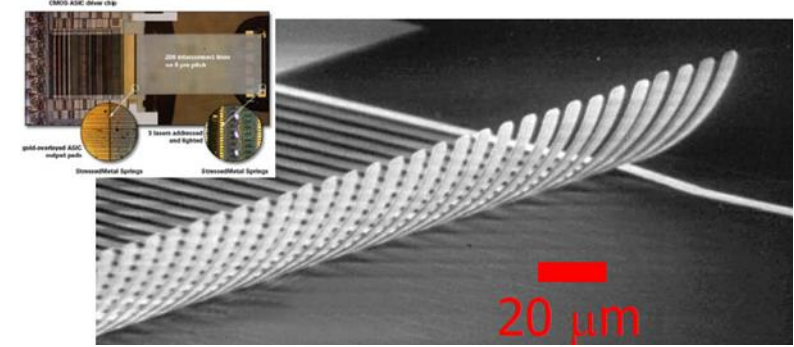
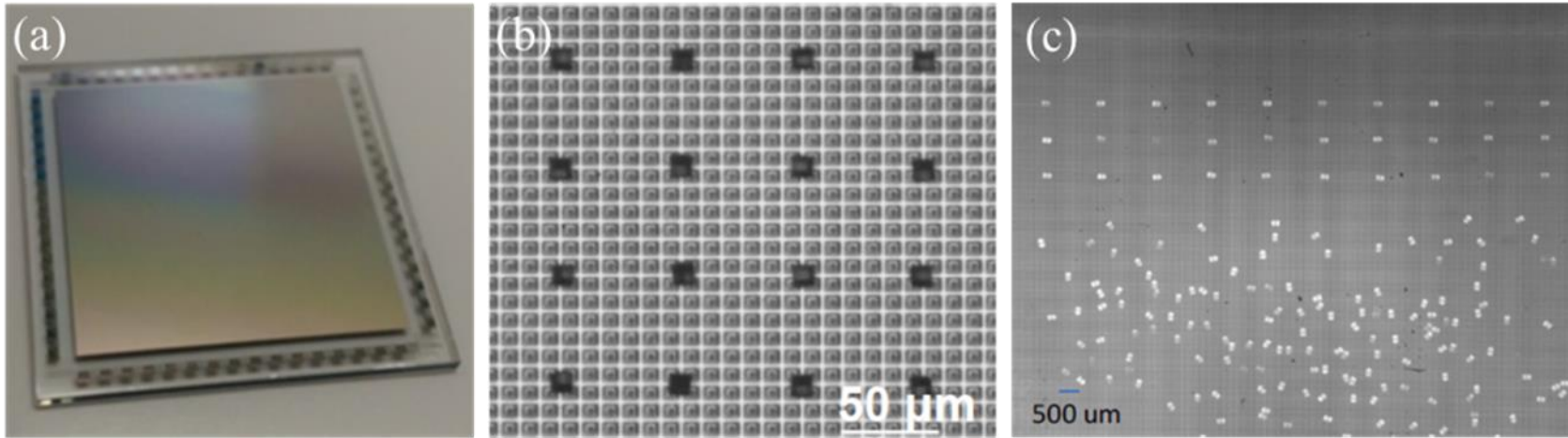


1m x 2m ETIR Module



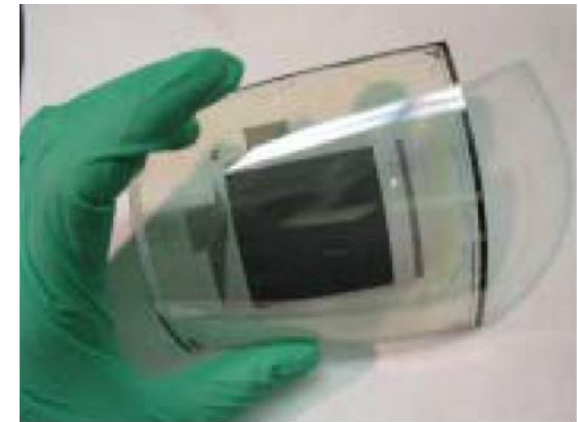
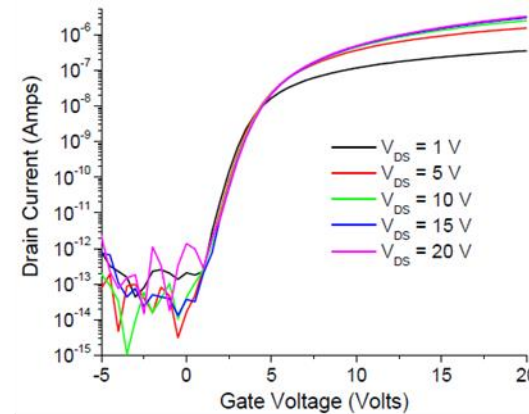
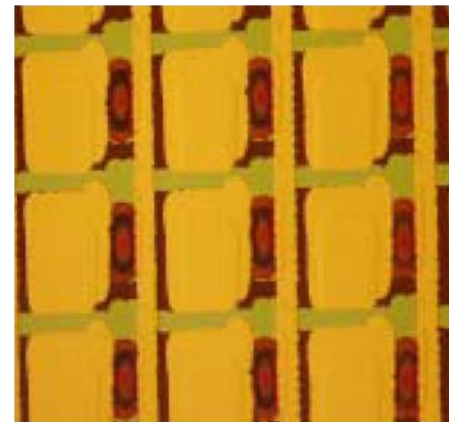
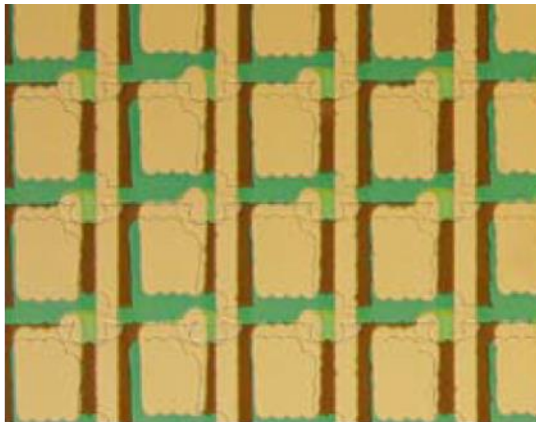
Luminescent Solar Concentrators

Microassembly, MEMS, Large-Area Thin Film Electronics



DARPA A2P and ARPA-E MOSAIC: OptoCAM finished device (a), small chips assembled on a 10 μm pitch electrode array (b), assembly process of 150 μm wide chips from a reservoir of chips on a 25 μm pitch electrode array (c)

MEMS Stress-Metal Microspring Interconnects



a-Si TFT Array - Digital Lithography

Printed Polymer TFT Array

I-V Curve Printed TFT

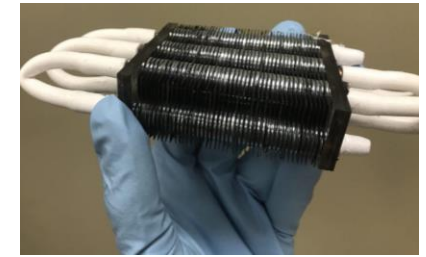
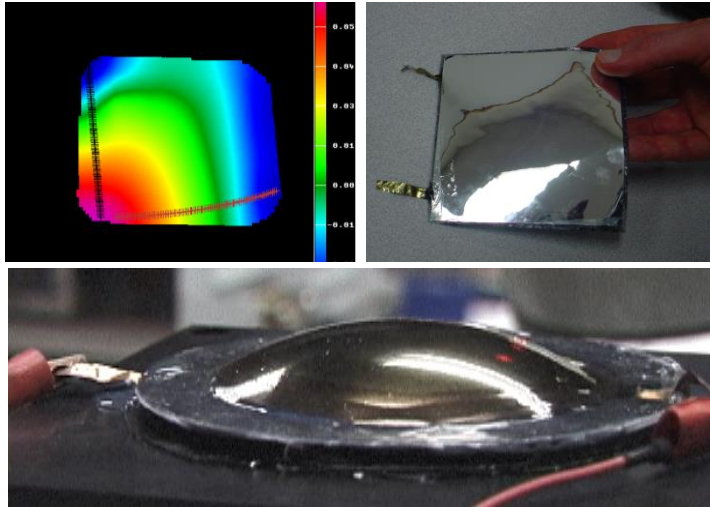
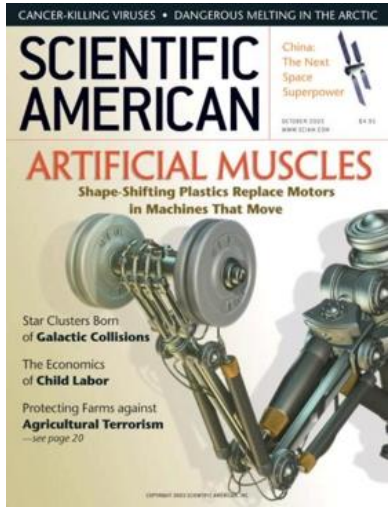
Printed a-Si TFT Array on Flexible PEN

Robotics Technologies



Electroactive materials for shape control and heat management

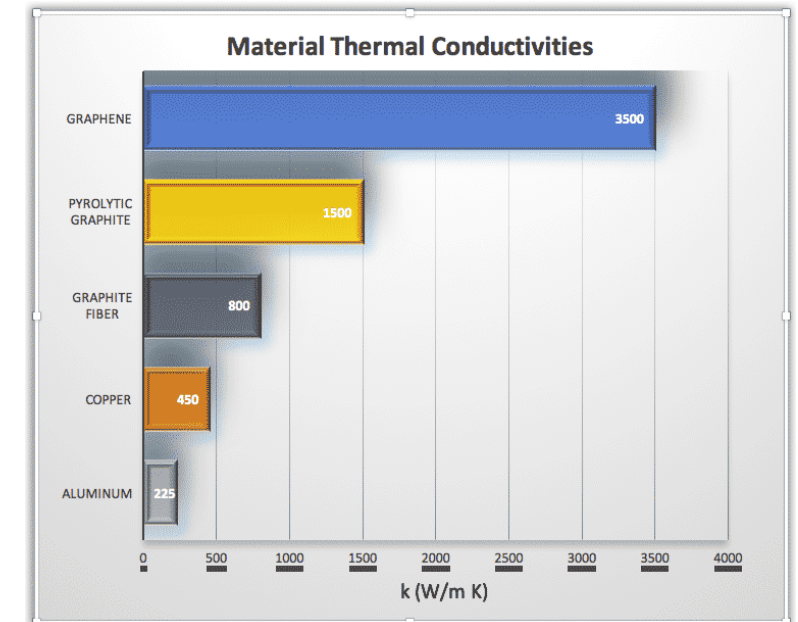
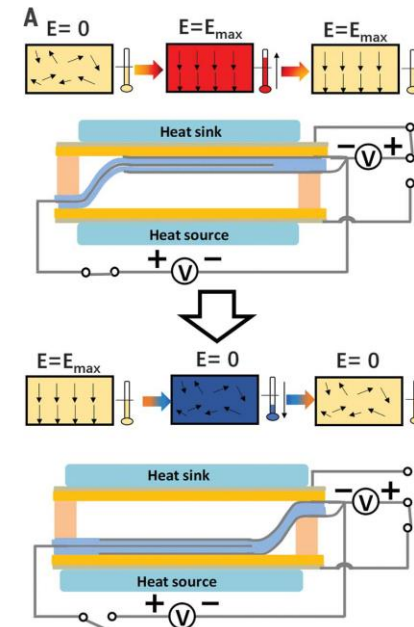
As part of ARPA-E's DELTA Program, SRI developed lightweight and flexible heat transfer and exchange materials



SRI pioneered “dielectric elastomer” **electroactive polymer artificial muscle**. For NRO, SRI demonstrated the feasibility of using this technology for **precise shape control of gossamer optics** in space

SRI developed conformal electrostatic clamping technology (**Electroadhesion**) for materials handling, wall-climbing, materials stiffness control, clutches and more.

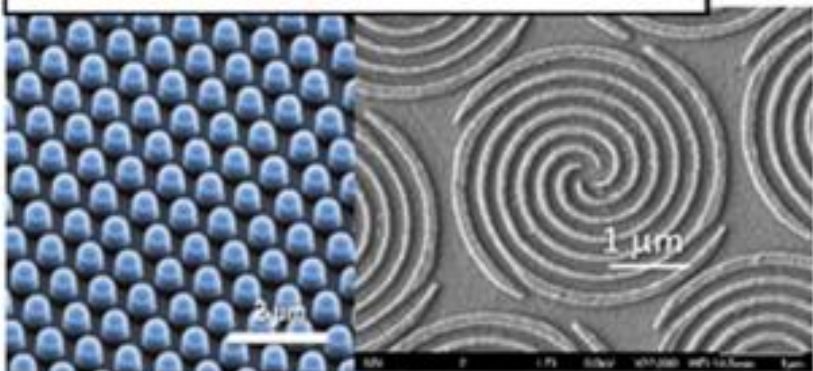
Developed the first conformal “**solid state**” **electrocaloric heat pump** with **integrated electrostatic actuation**.



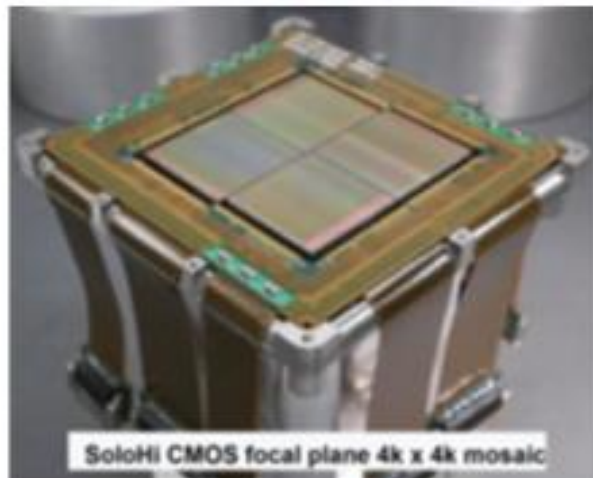
Advanced Materials, Space Imagers, Debris Tracking



- Metamaterials and metasurfaces
- Optical materials



SRI ATSD Advanced Materials



SRI Insys Radiation Hardened CMOS Imager in ESA Solar Orbiter, Parker Solar Probe, Europa Clipper, GOES



SRI ATSD Space Debris Detection and Monitoring System

In-house capabilities:

- Optical system and mechanical system design
- Semiconductor and PV devices and materials
- Spacecraft system design
- Computational modeling and simulation
- Micro-assembly and micro-fabrication
- Radar and RF systems
- Many other technical disciplines

Partnering opportunities:

- Multi-junction PV cells
- Spacecraft thermal systems
- Spacecraft structures
- Spaceborne battery management systems
- Spaceborne electrical energy storage
- Spaceborne environmental durability testing/analysis



Thank you!