San Diego Nanotechnology Infrastructure (SDNI)

Our Focus:

- Continuously expand user base and build technical strengths in ***Nano/Meso/Metamaterials, NanoBioMedicine, NanoPhotonics, NanoMagnetics,*** and ***advanced semiconductor technologies.***

- Support and enable transformative research in top priority areas for the nation and NSF. We will particularly enable and advance ***convergence research of significant societal impact.***

- Become a major force in building the ***nation's economy*** by training the work force, seeding innovations, and helping the industry develop and commercialize nanotechnology products.

- Strengthen K-12 (especially high-school) and community college ***STEM education*** and ***promote diversity***. Make a ***"scalable education program"*** for the state of California.

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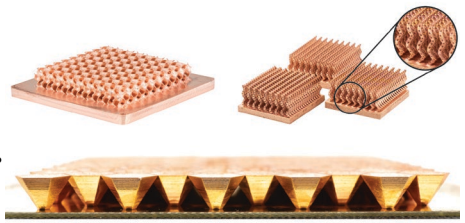
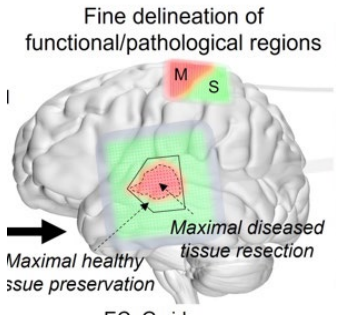
How NNCI Sites Support Translation of Research

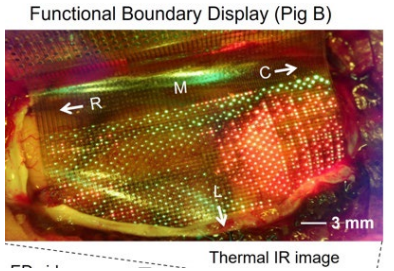
- **SDNI supported technology and manufacturing scaling.**
  Example: SDNI helps Fabric8 Labs transition and scaling of its electrochemical additive manufacturing process. Fabric8 Labs used the SDNI facility and collaborated with the SDNI staff (e-beam lithography, patterning, metrology) to develop its electrochemical additive manufacturing process. It has scaled up to process to volume manufacturing in a new facility.



- **SDNI supported transition of research from PI's labs to prototypes and pilot production.**
  Example: SDNI staff helps Professor Sahdi Dayeh to make prototypes of wirelessly connected integrated neural probes and LEDs for brain surgery and transition the technology to a cGMP facility.



- **SDNI supported Lab-to-Fab transition.**
  Example: SDNI staff have been working closely with a team of PhD students and postdocs, supervised by a group of faculty PIs, to develop technologies that can be transitioned to industrial manufacturing sites. The research projects in the lab-to-fab transition include heterogeneous integration technologies, CMOS Plus for enhanced functions (AI, neuromorphic computing), and advanced packaging.



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What is More We Can Do to Support Research Transition to Commercial Sector

- Understanding the importance of "**design for manufacturing**" in the choice of tools and methods, process flow, and scalability.

- Continued investments in the tools and improvements in the process control. The site's capability to **support cutting edge research** and enhanced **process reproducibility** is key to transition from labs to industry.

- Supports **entrepreneurship**. Working with the incubation centers to allow easy access to the NNCI facilities by entrepreneurs and companies in the seed stage and early stage.

- **Pipecleaner projects** between university labs and industry labs. Pipecleaner projects are mini projects focused on the critical steps in research transition. Researchers form PI's labs, NNCI staff, and the staff in industry labs work together on such "pipecleaner projects" to pave the way for research transition.