

An overview of offerings by

SOLID-STATE RESEARCH INC.

Company Profile

A MEMS services company assisting small and large companies since 2002. The mission is to provide capabilities, flexibility, experience, and ingenuity to clients to reduce the overall cost of MEMS sensor and microsystem development and expand the product-base.

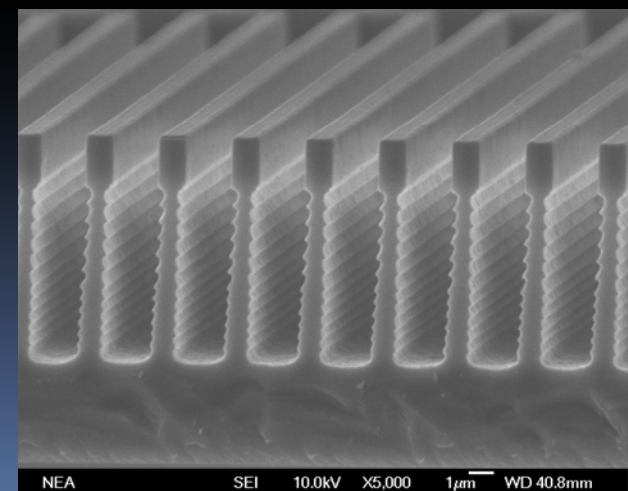
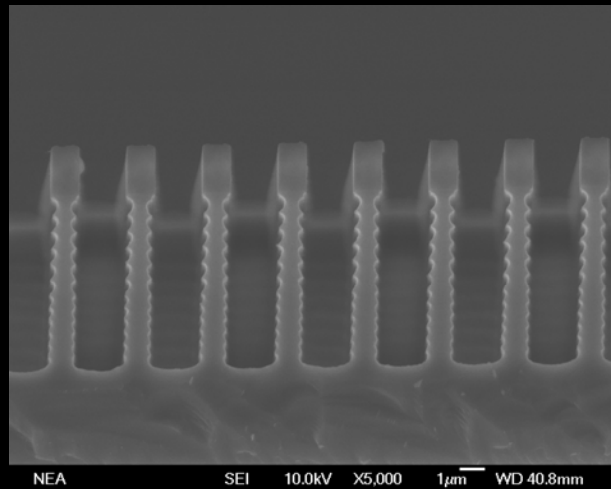
Founded by Dr. Demetrios Papageorgiou who has over 14 years of hands-on experience in MEMS and microsystem design, fabrication, manufacturing, and test.

- Ph.D. University of Michigan, Ann Arbor under Kensall D. Wise
- Small business experience at Canopus System, Optifer, and MEMSIC.
- Academic experience with joint EE and ME appointment at WPI and Northeastern Univ.

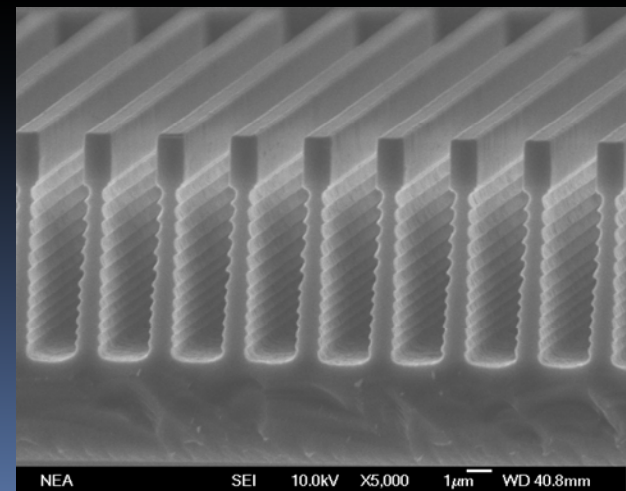
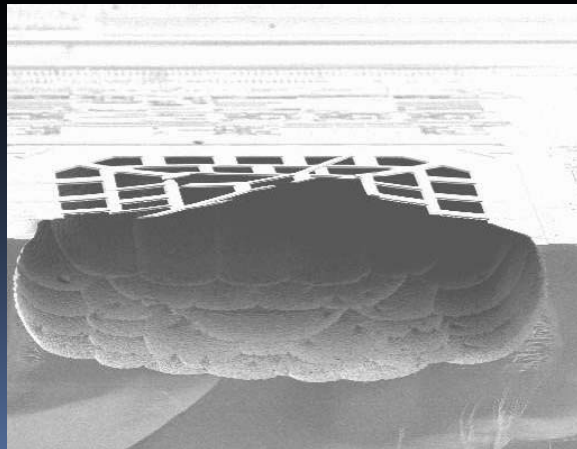
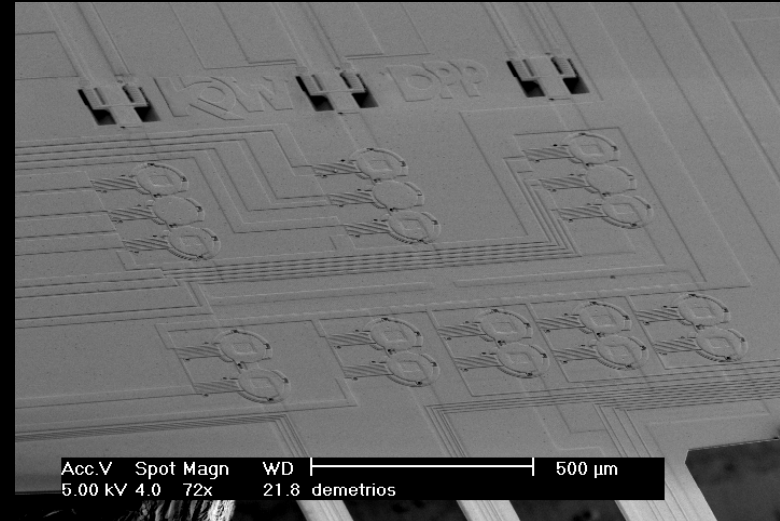
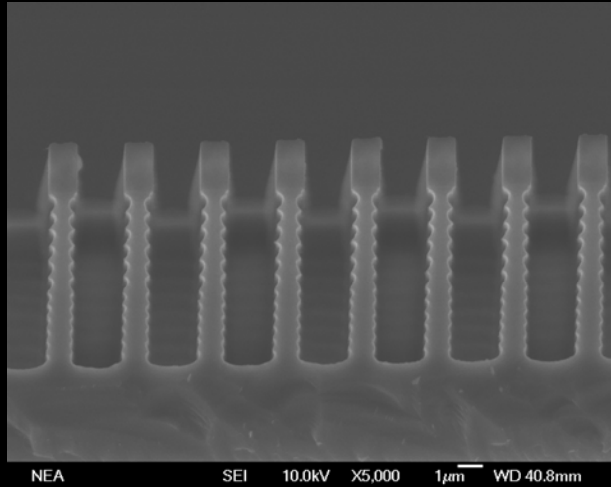
Where are we located?



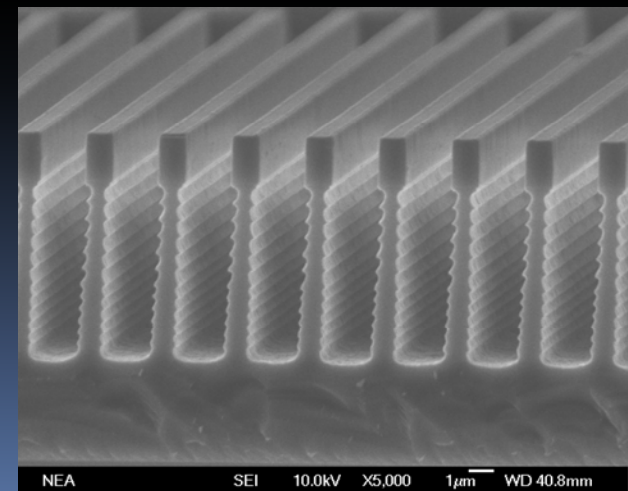
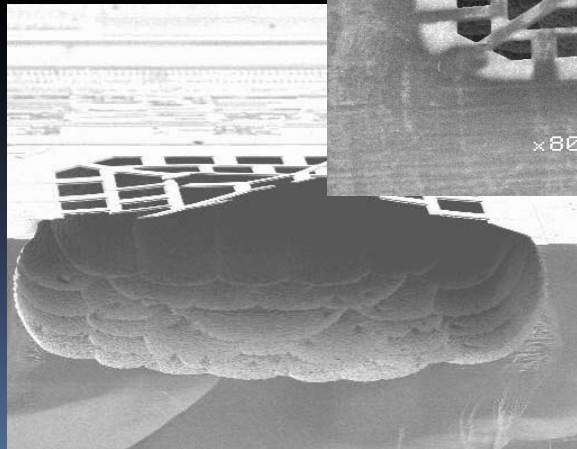
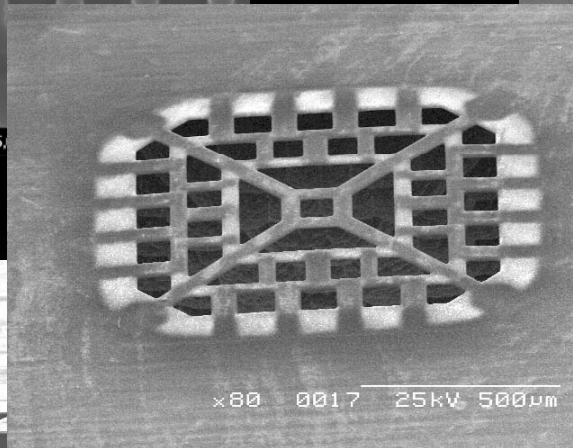
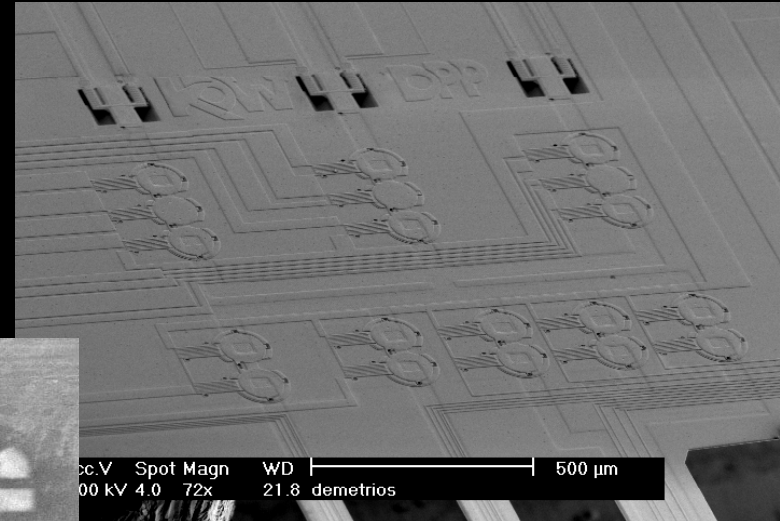
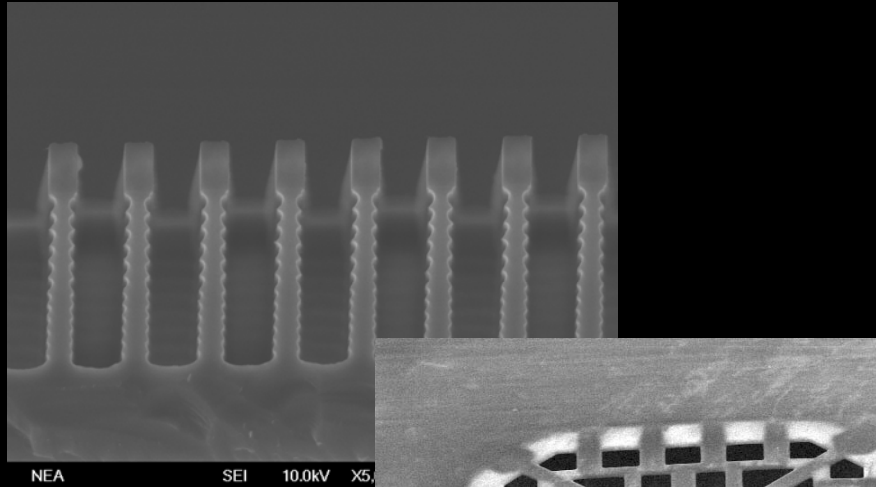
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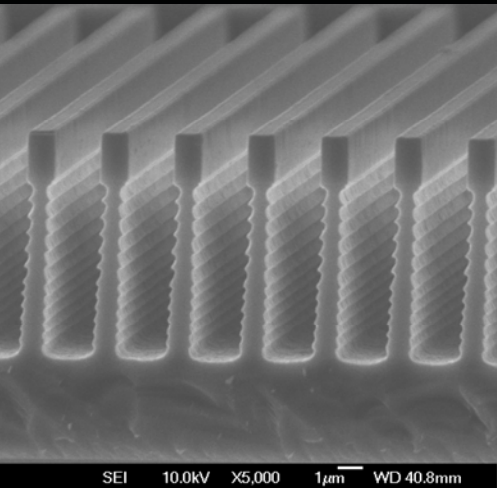
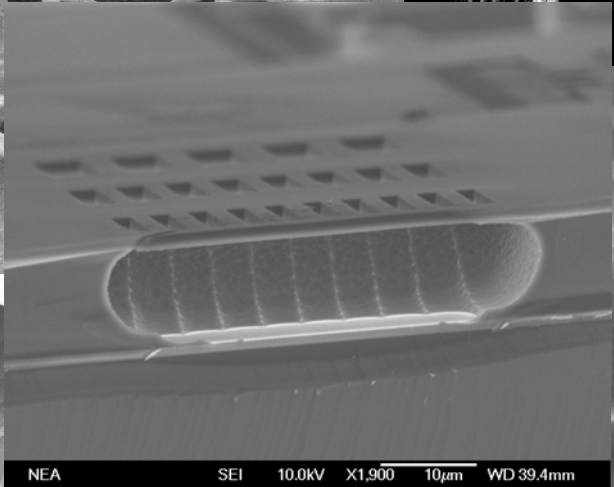
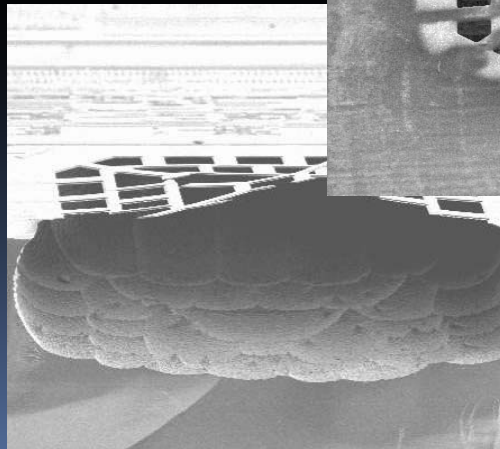
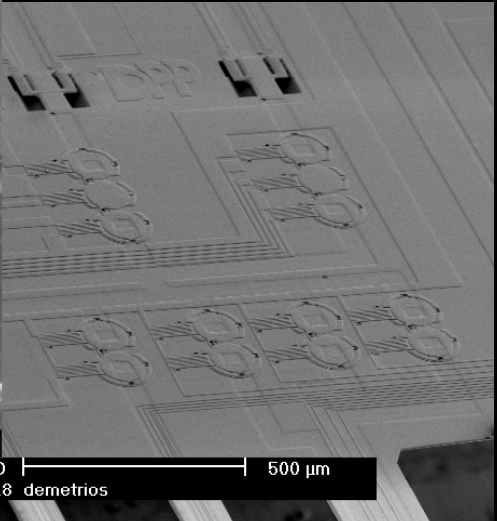
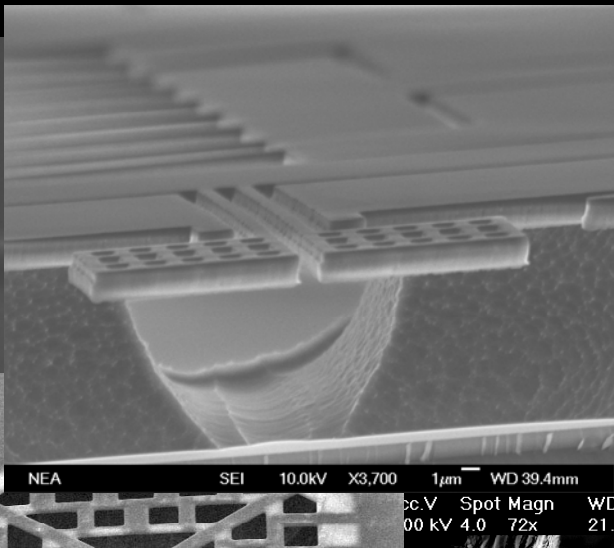
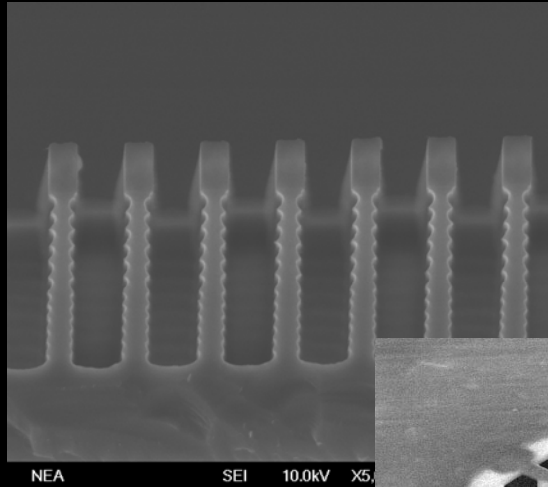
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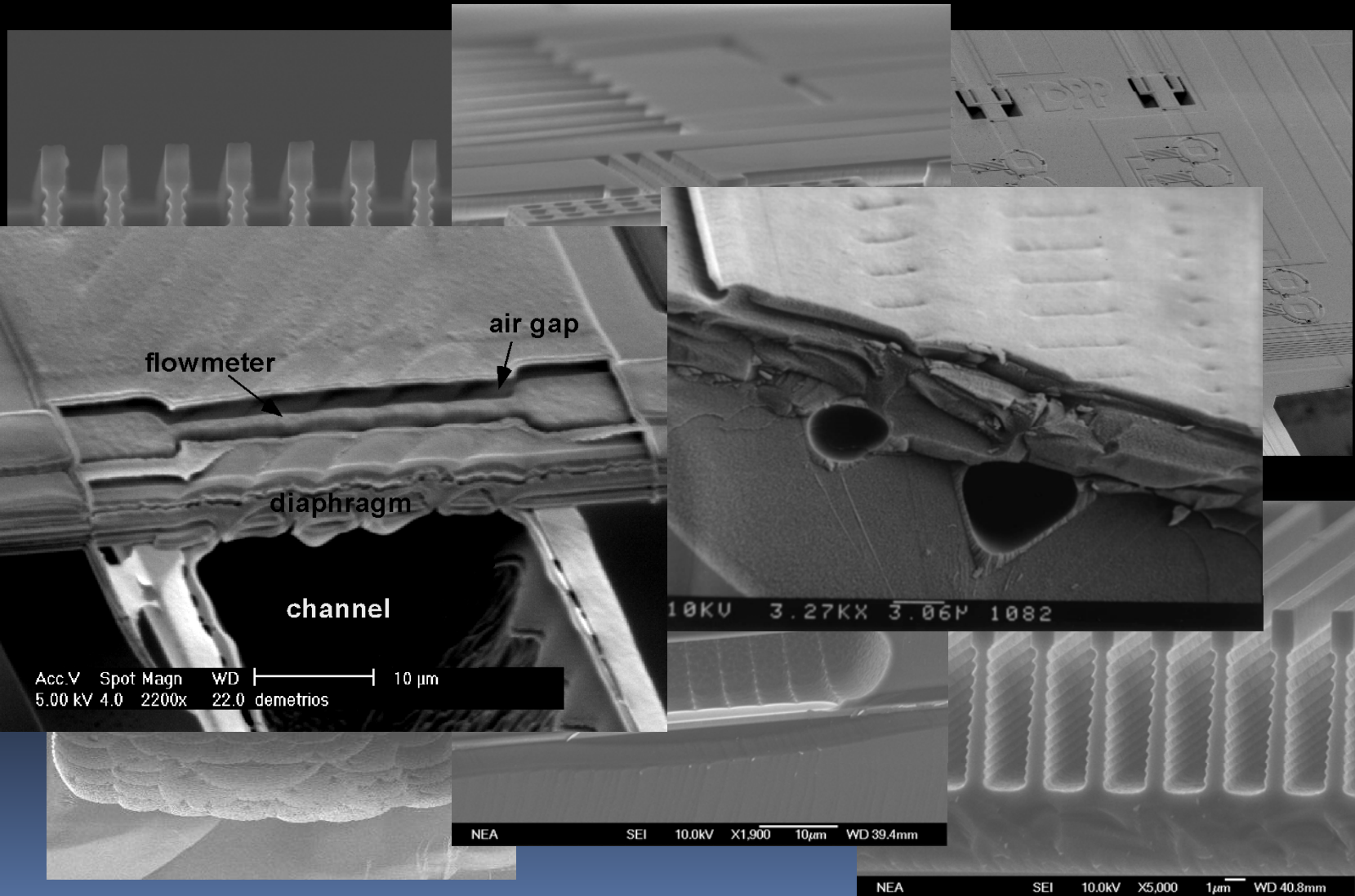
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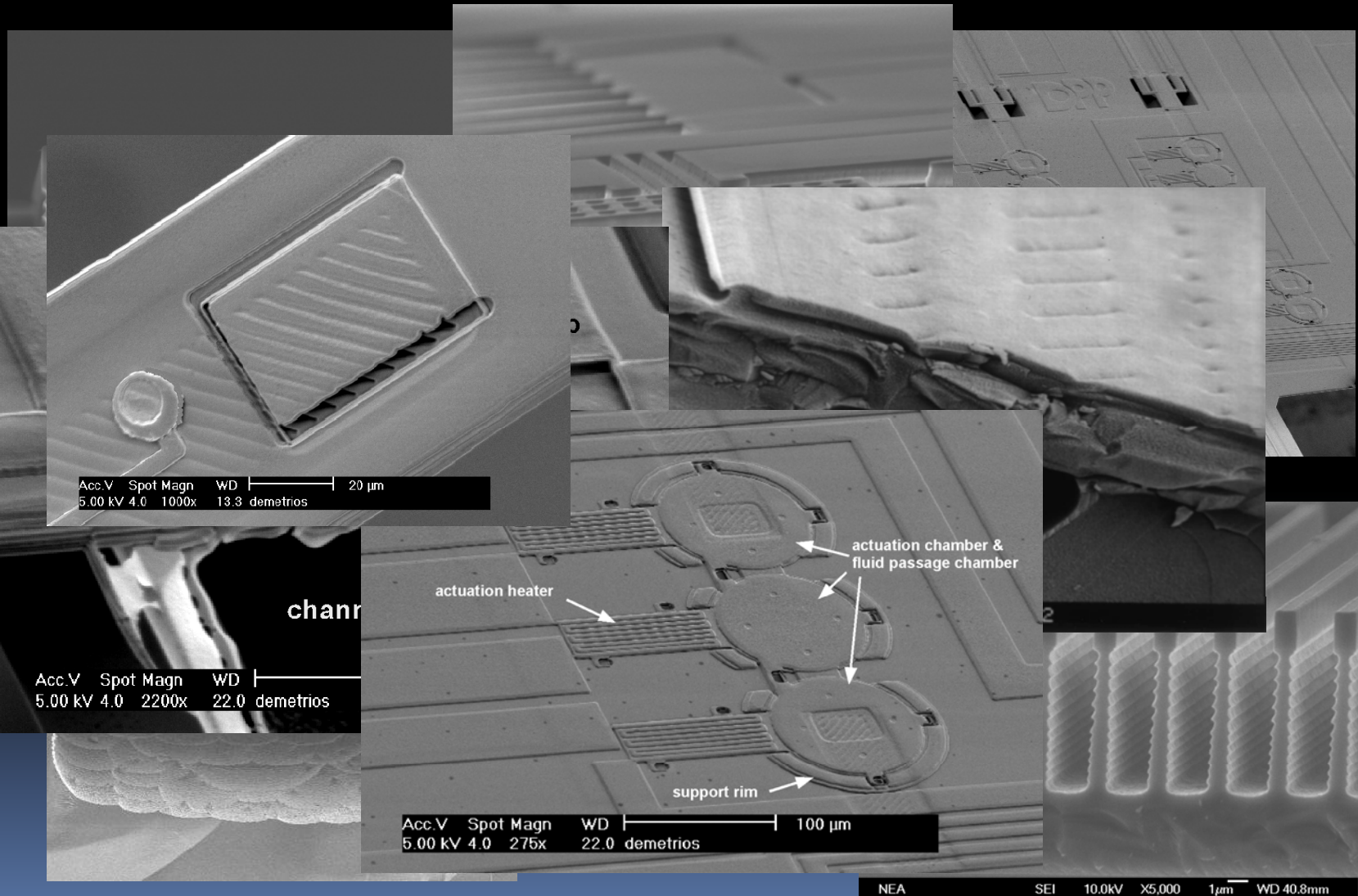
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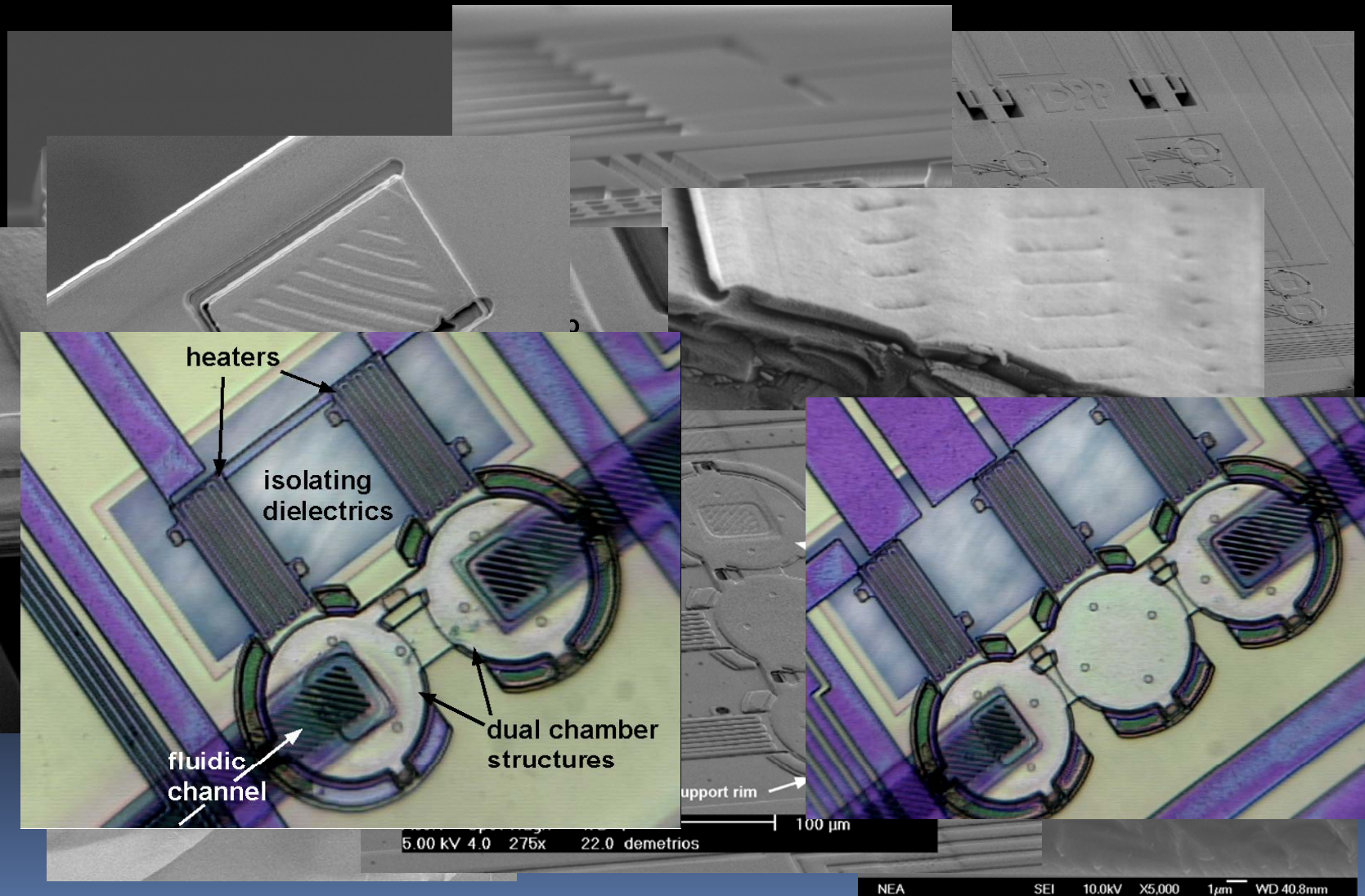
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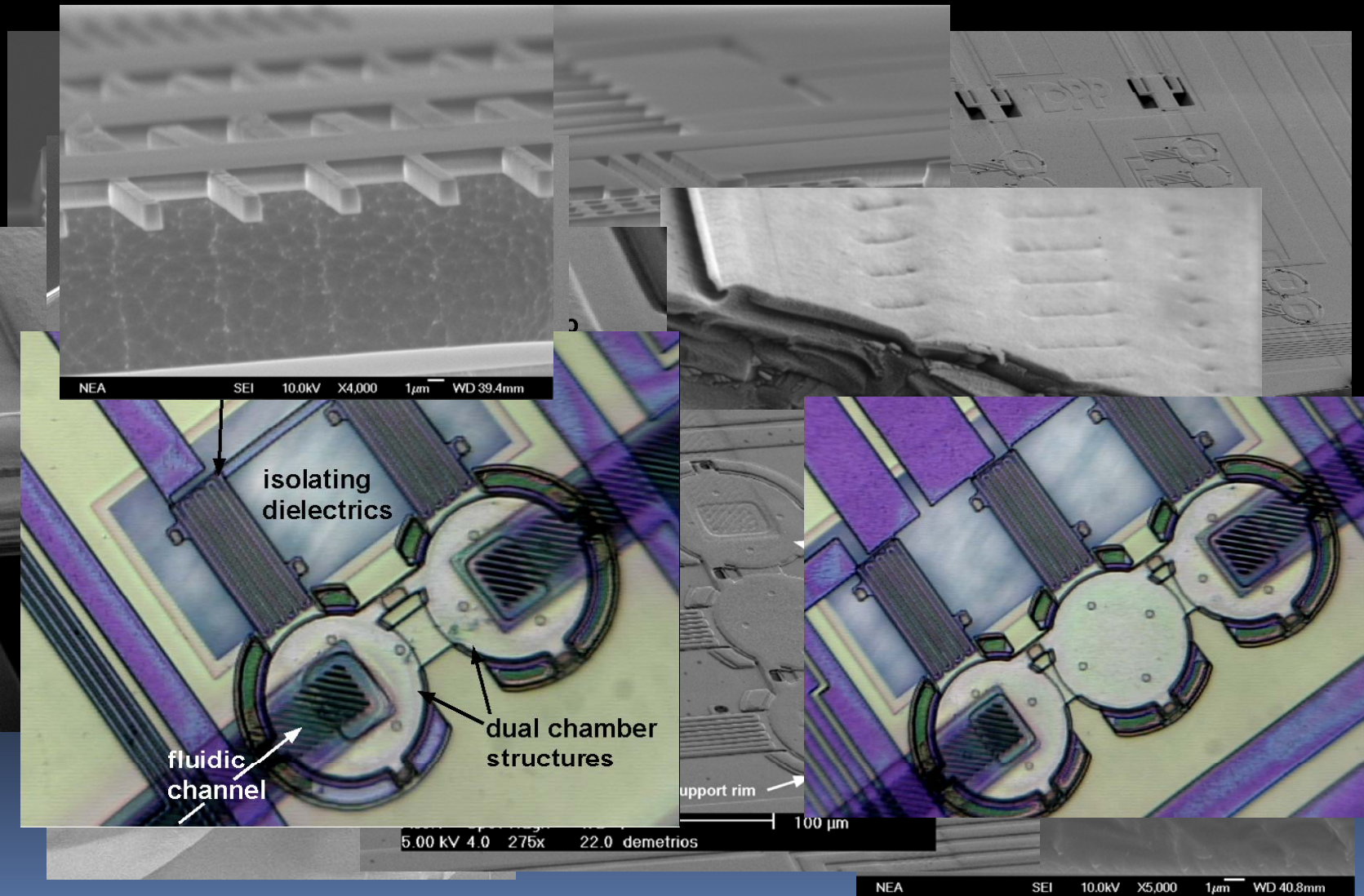
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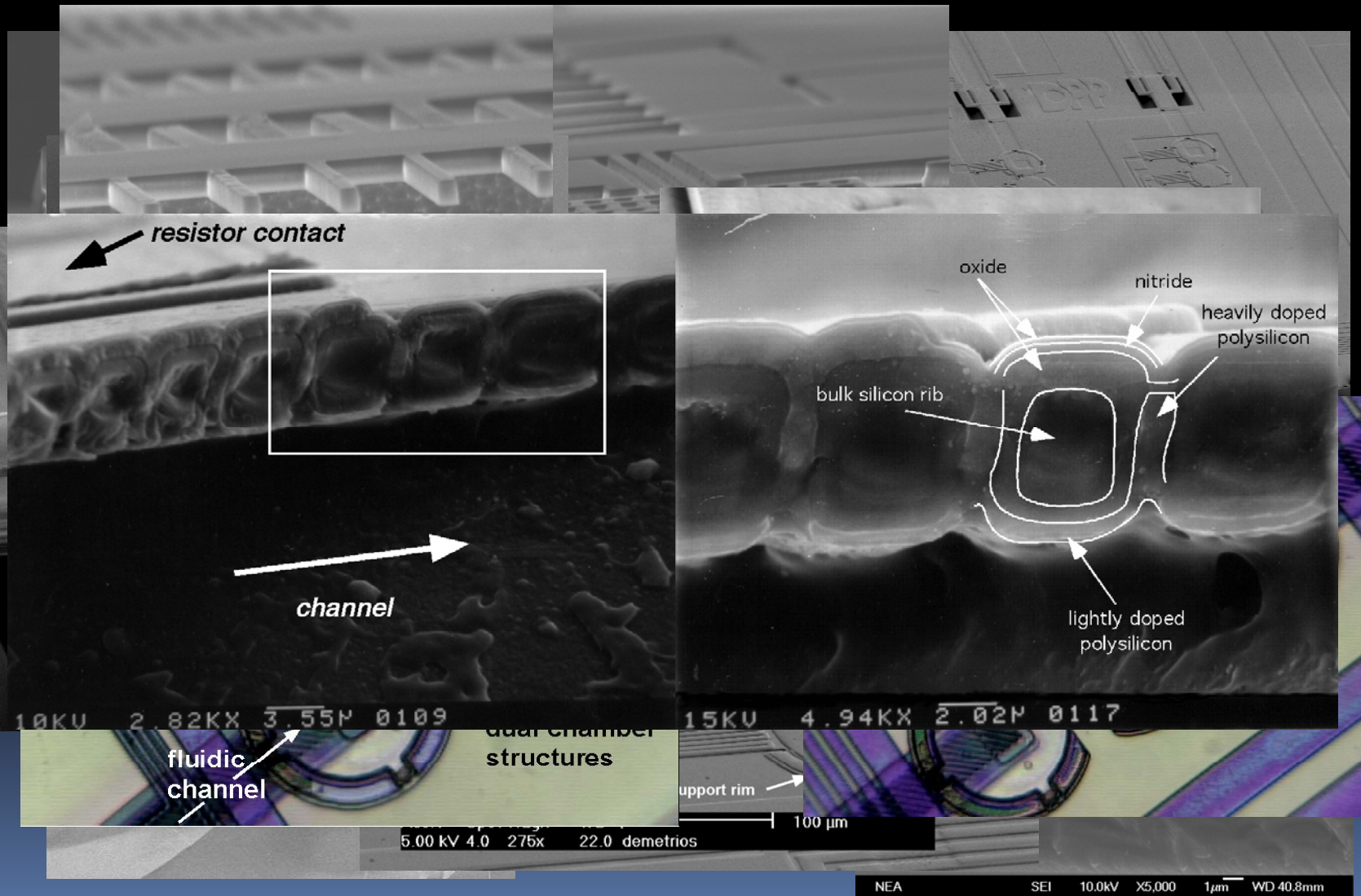
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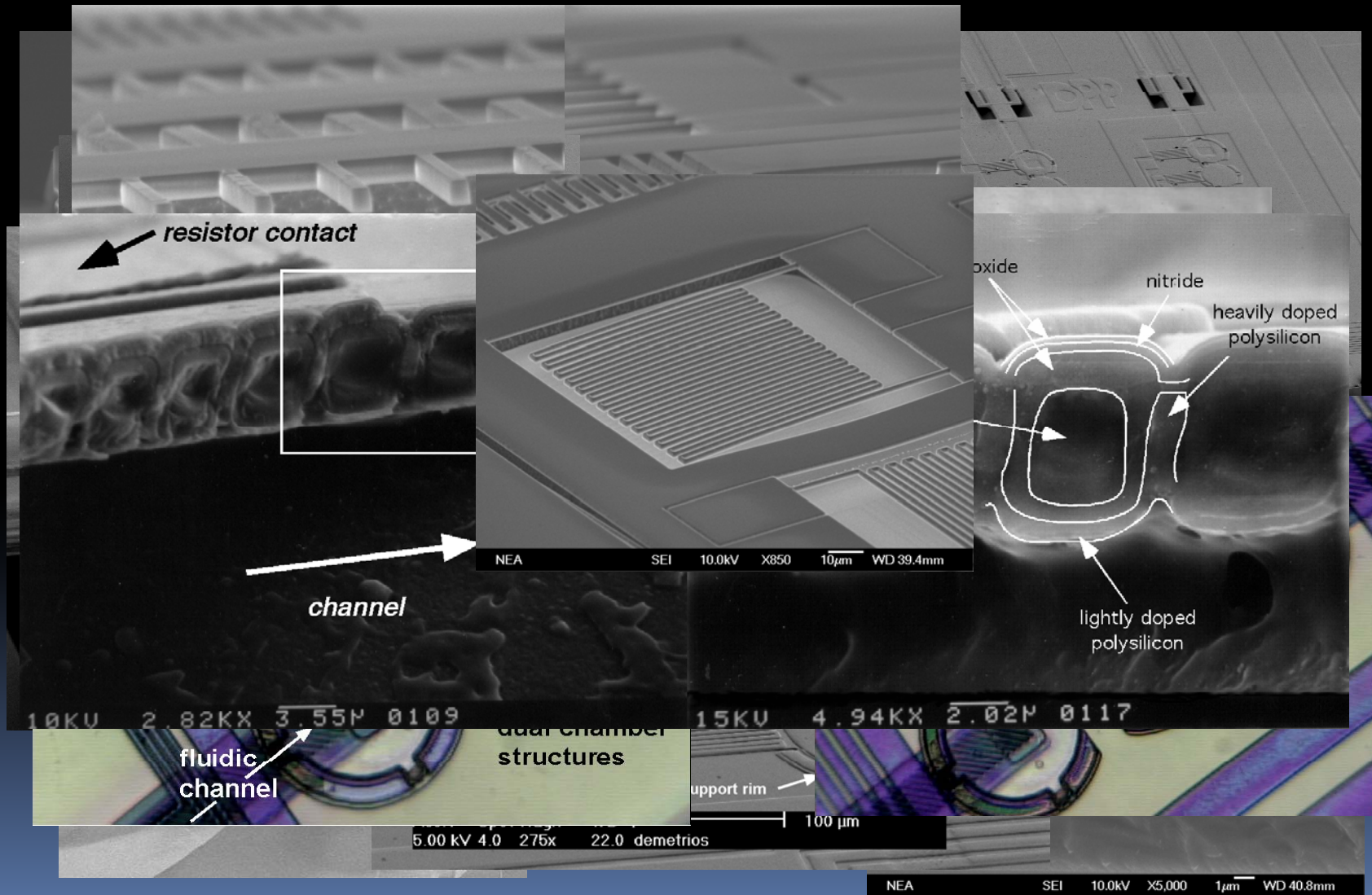
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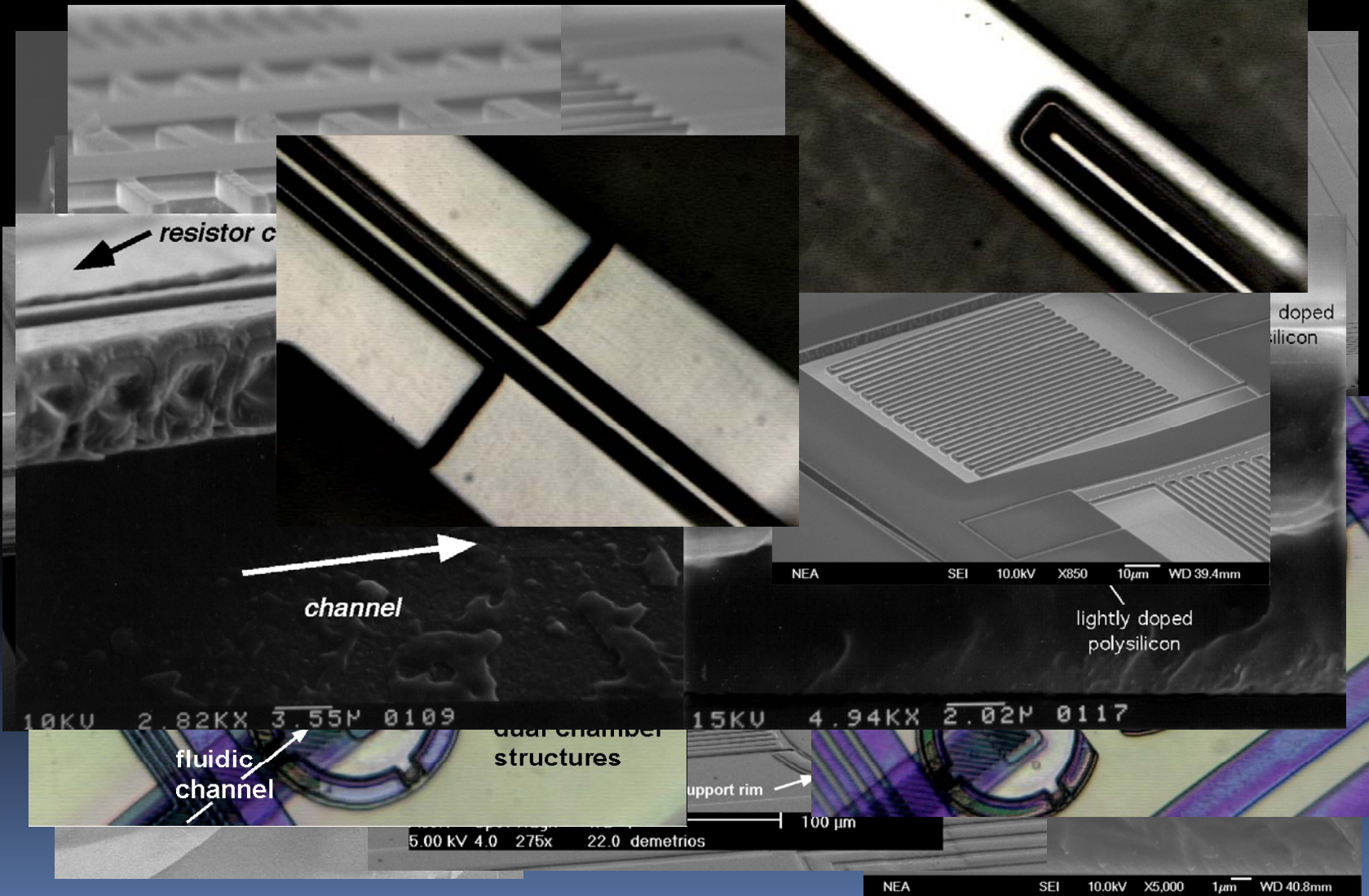
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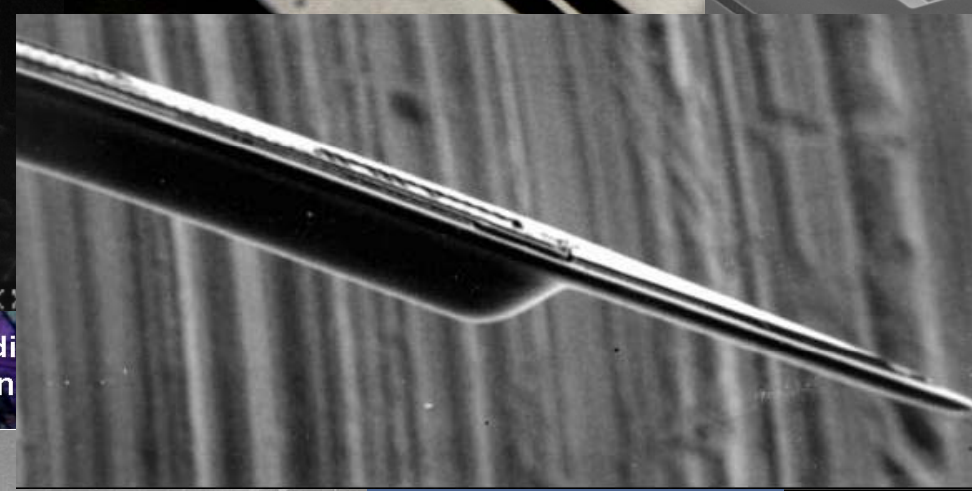
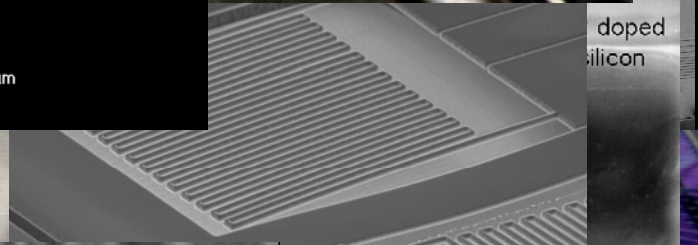
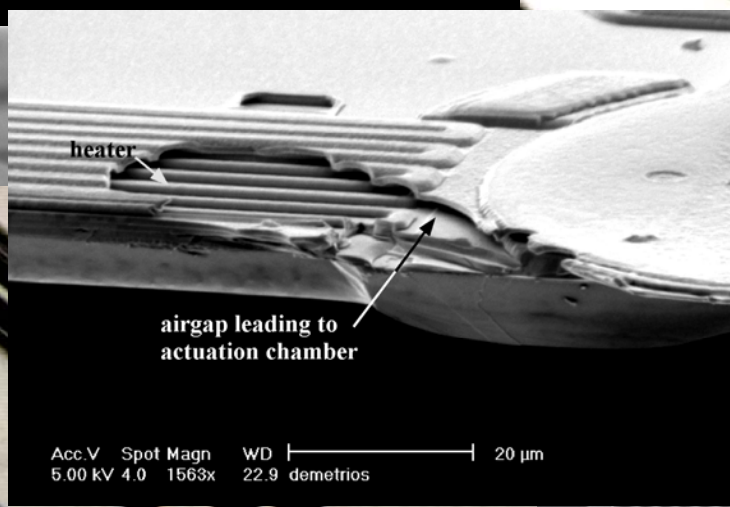
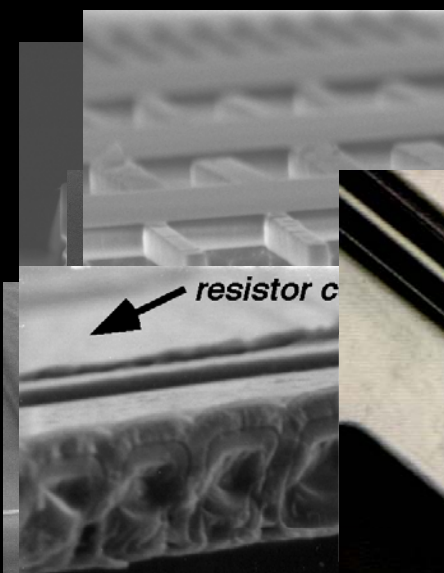
Devices made..



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Services Provided

Complete Product-Cycle Development including:



- Technology evaluation
- Prototype design
- Process development, fabrication and assembly
- Testing
- Low-volume manufacturing
- Process transition to high-volume foundry
- Foundry oversight

Services Provided

- Technology evaluation
 - Feasibility, performance, manufacturability, ...
 - Proposal review
 - Company acquisitions
 - Venture capital investment
 - Government funding agencies



Services Provided

- Prototype design
 - Concept development
 - Modeling of behavior
 - Robust design
 - Layout
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Services Provided

- Process development and fabrication
 - Fit desired device into existing capabilities
 - Simplify processes and reduce masking steps
 - Improve process robustness
 - Introduce new materials or processes
 - Fabricate new devices without disrupting process line.

Services Provided

- Testing
 - Complete device evaluation
 - Comparison to models and model validity
 - Performance prediction

Services Provided

- Low-volume manufacturing
 - Convert prototype into volume production
 - ~100,000 components/month
 - Debugging of process variations
 - Yield improvement
 - Packaging resolution
 - Failure analysis

Services Provided

- Transition assistance to high-volume foundry
 - Process adjustment to fit foundry
 - Interact with foundry to ensure complete disclosure of necessary information
 - Step-by-step evaluation of initial runs
 - Failure analysis

Services Provided

- Oversight of foundry
 - Continuous interaction with foundry
 - Authorize process changes
 - Monitor quality
 - Address all issues raised by foundry

Example Relationships


- Explore new product line possibilities
 - Generate ideas for application needs or new markets
 - Develop prototypes for proof-of-concept
 - Evaluate device/system performance
 - Adjust designs and processes based on required specifications and unit cost.

Example Relationships

- Augment current capabilities
 - Provide access to processes not available in client's facility
 - Provide expertise in processes and know-how not currently available in-house
 - Supplement existing talent
 - Provide back-up foundry
 - Increase capacity/production volume

Highlighted Processes Available

- Lithography
 - Single/Double-sided alignment
 - Stepper or Contact
 - Up to 150 μ m thick resists
- Thin-film deposition
 - Metal (Ti, W, Ni, Cr/Au, Ti/Ir, Al,...)
 - Thermal or E-beam Evaporation, Sputtering
 - PECVD, LPCVD
- Deep Reactive Ion Etching
 - Bosch
 - Oxide
 - Cryogenic
- XeF₂
- Vapor-HF
- Other wet and dry etch processes
- Wafer-bonding
- Probing



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