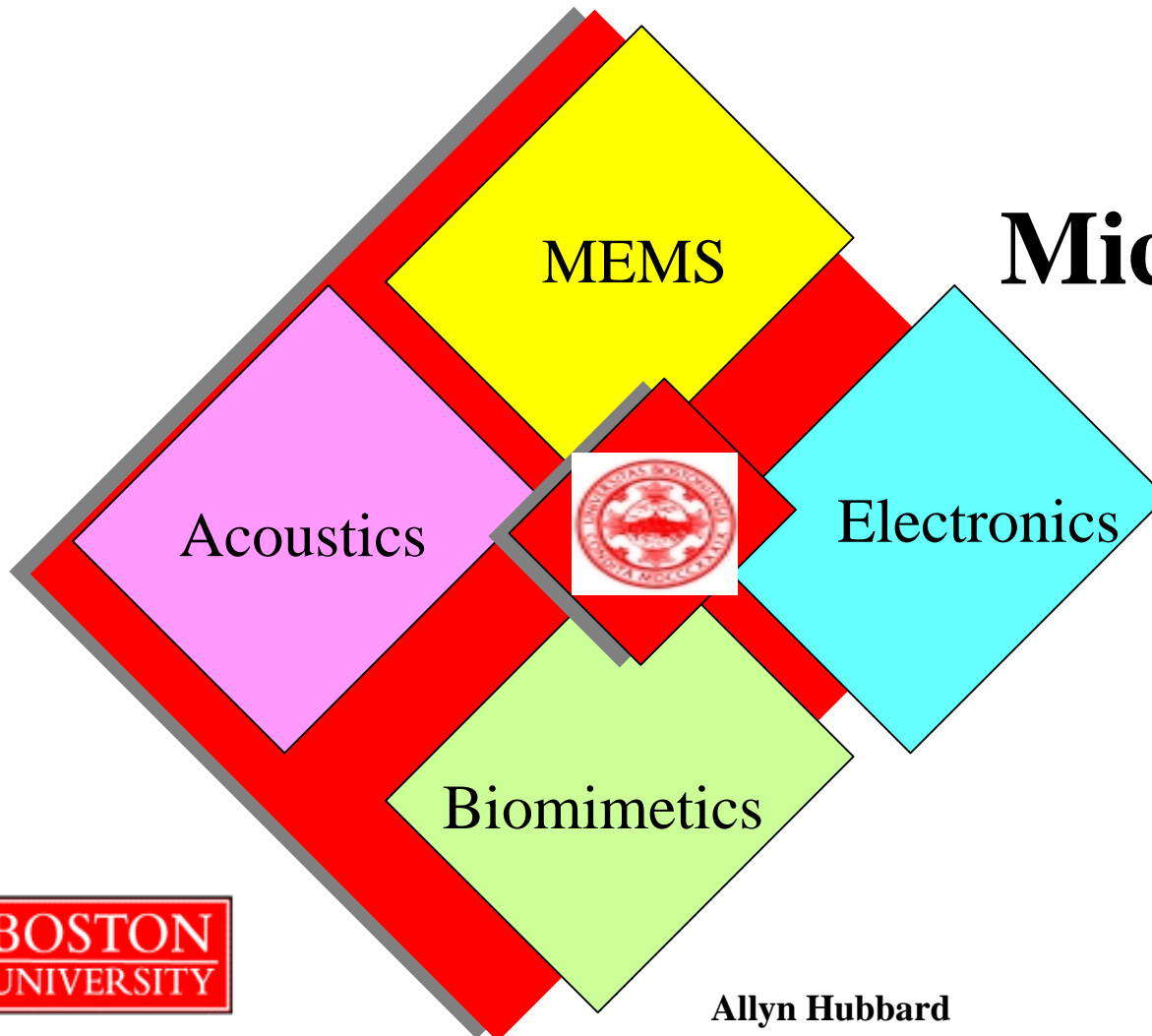


# BOSTON UNIVERSITY GROUP FOR SENSORS



## MicroElectronics



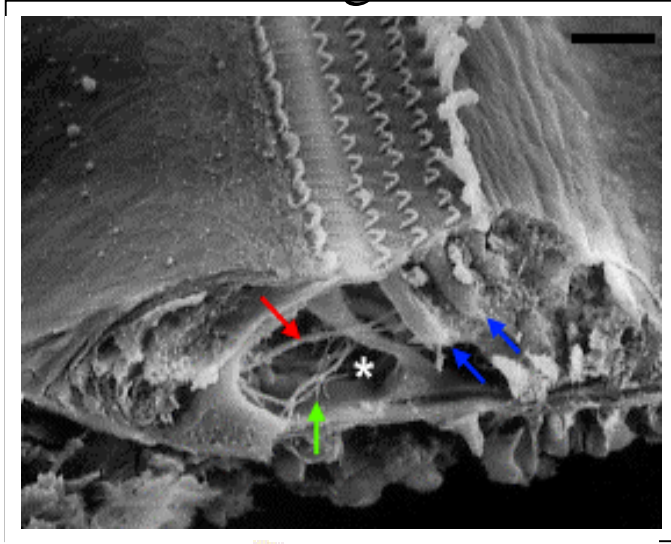
Allyn Hubbard



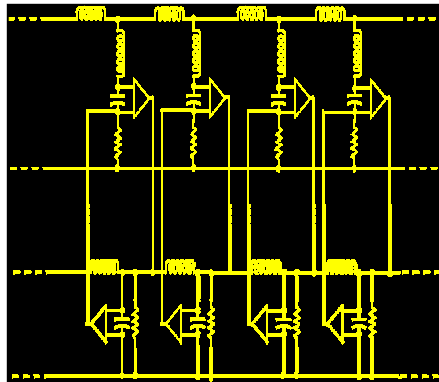
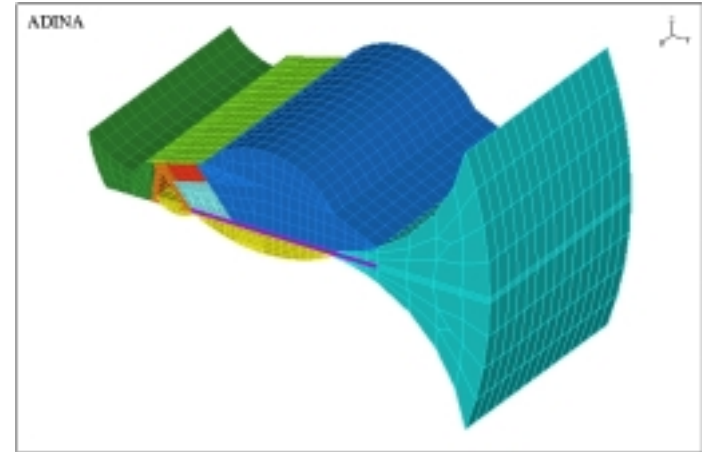
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# From Biology to Silicon: Ear

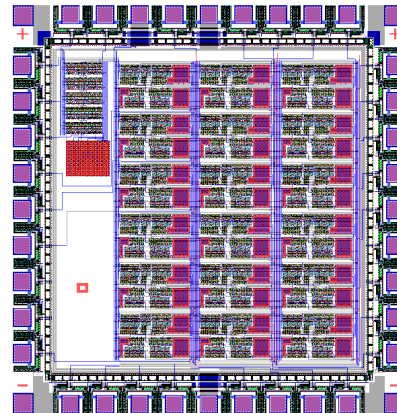
Biological



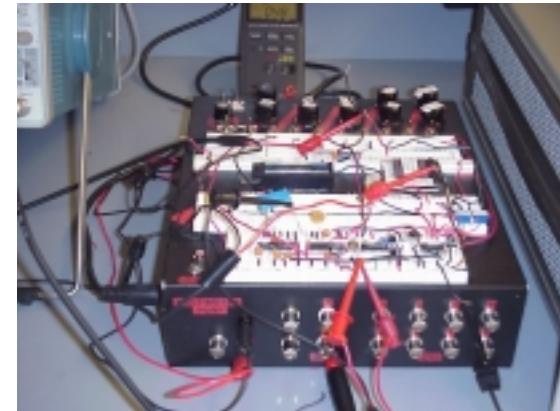
FEM Model



Circuit Simulation

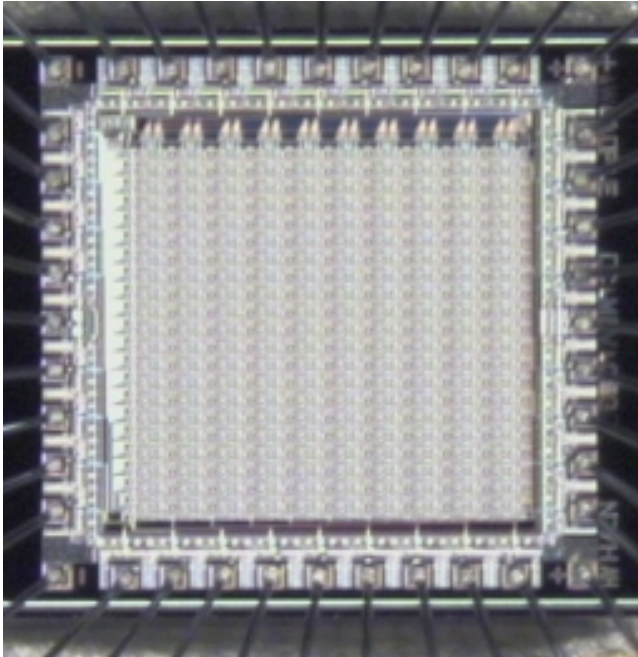


VLSI Realization

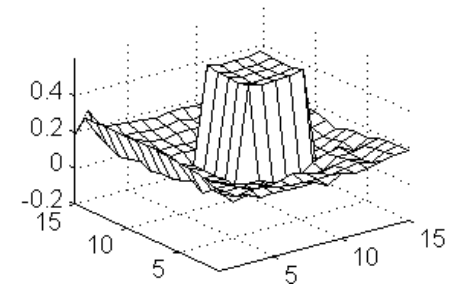
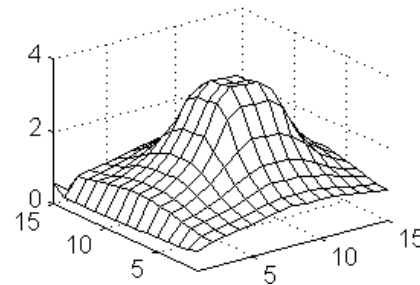
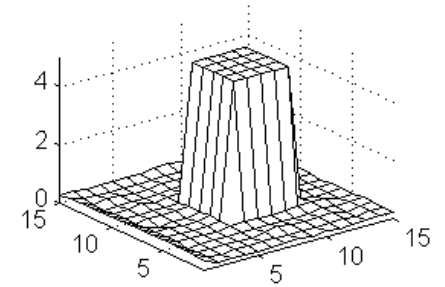
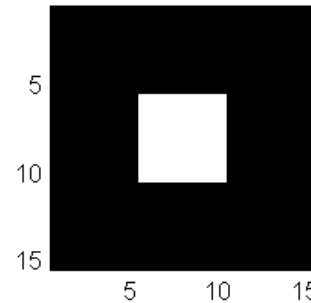


Hardware Test

# From Biology to Silicon: Eye



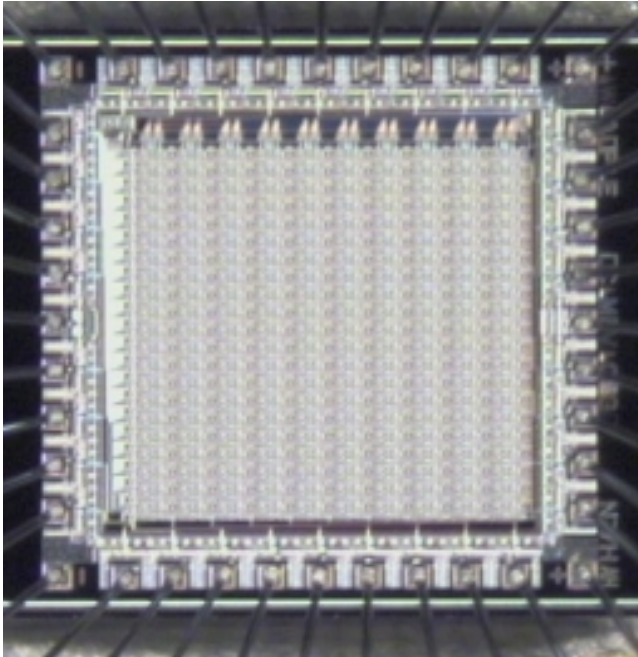
**Spatial filtering  
chip**



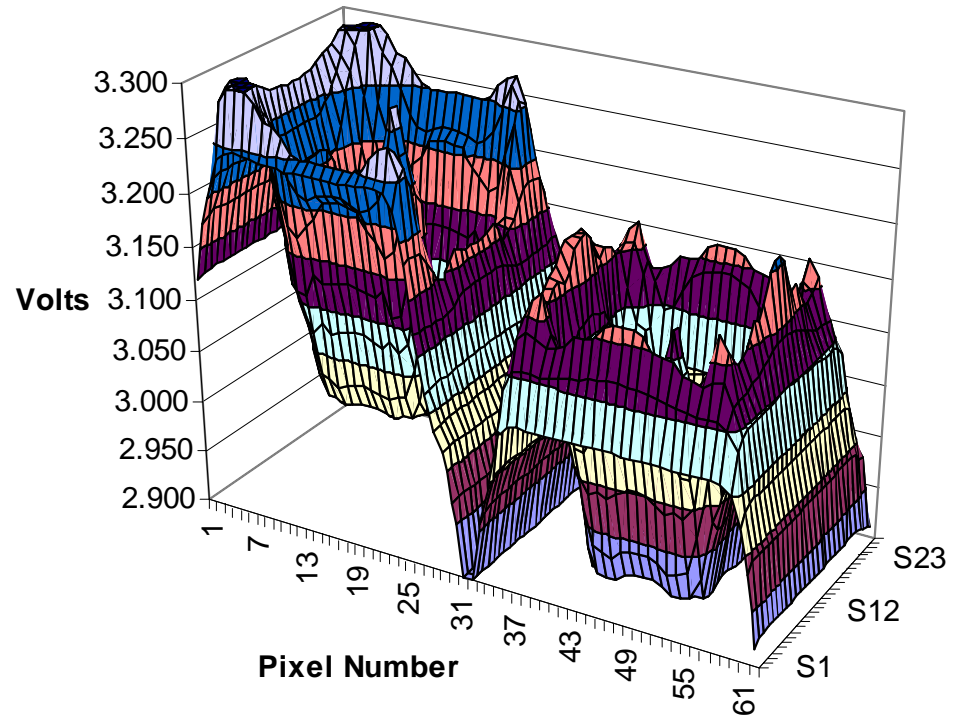
**Spatial filter  
response**



# From Biology to Silicon: Eye



**Spatial filtering  
chip**



**Spatial filter  
response**

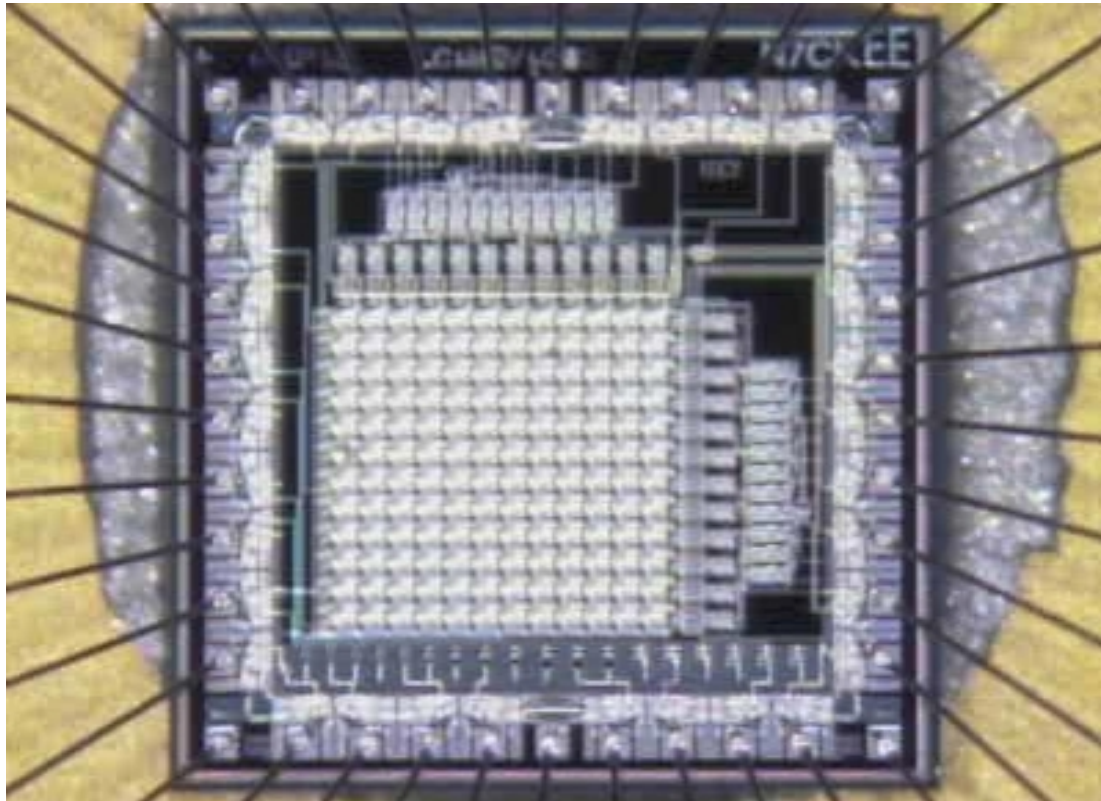




# High-bandwidth Asynchronous Integrated Intermodule Pixel-to-Pixel Communication

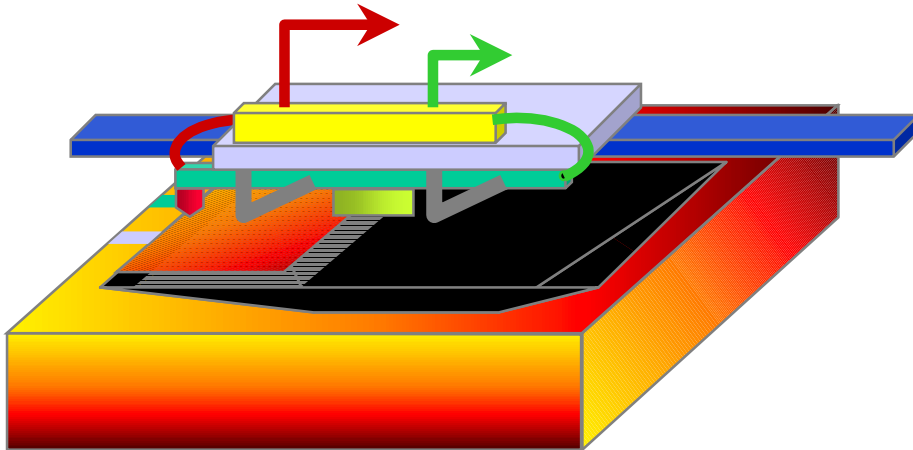
- Analog/Digital design
- Communicates “as needed”
- Low Power Standby
- 6 MHz Maximum throughput

Array of Pulsatile Neurons



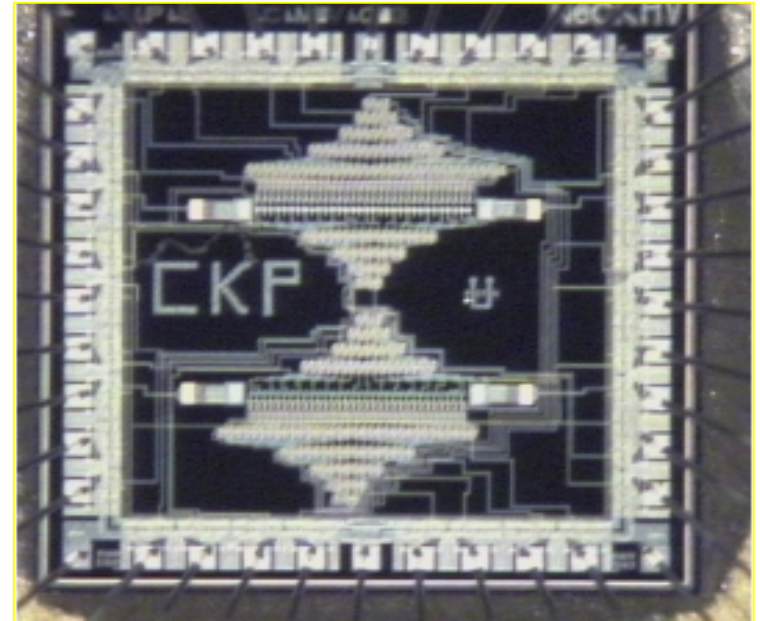
# Chemistry on Silicon

## Wafer-scale Chemical Analysis



**Silicon micro-well  
with micro-servicing apparatus**

## Microelectrophoresis



**Microchip with two separate  
electrophoresing pathways  
plus sensor electronics**