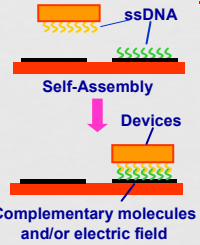
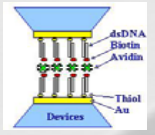
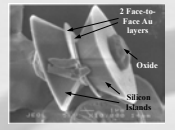
2002-2003

Project Highlights

BASIC: BIO-INSPIRED ASSEMBLY OF SEMICONDUCTOR ICs



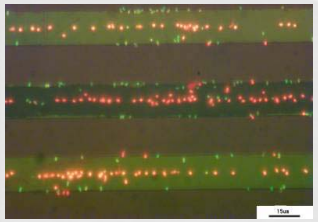




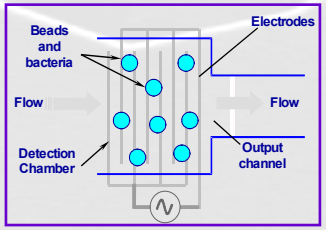
Assembly and selective placement of silicon on plastics and glass

Dielectrophoretic Sorting and Separation of Cells

Cell sorting: live cells (green, positive DEP), dead cells (red, negative DEP)



DEP based micro-fluidic filters and valves

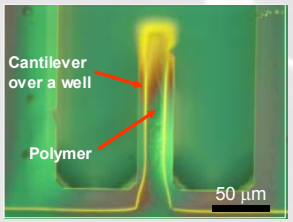


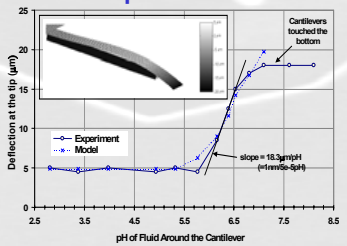
AFM Imaging of Virus and Bacteria

Bacteria and virus on micro-fabricated surfaces of biochips

Ultra-sensitive pH Micro-Sensors

ΔpH = 1-10e-5





Environmentally sensitive micro-patterned polymer structures on cantilever sensors

Laboratory of Integrated Biomedical Micro/Nano-Technology and Applications (LIBNA)

PI: Rashid Bashir

Nanotechnology

MEMS/BioMEMS Biotechnology

Bio-Mimetics Self-Assembly

Micro/Nano Bio/Chem Sensors

Integrated Bio-Chips

Self-Assembling Electronics

Implantable Micro-Devices

Applications

Biosensors, Electronics, Food Safety, Homeland Security, Medicine

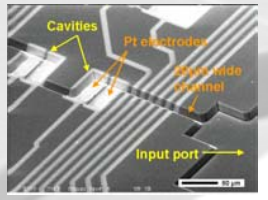
For more information visit:

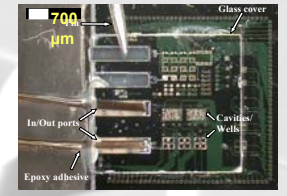
www.ecn.purdue.edu/BioMEMS/

PURDUE UNIVERSITY

Project Highlights

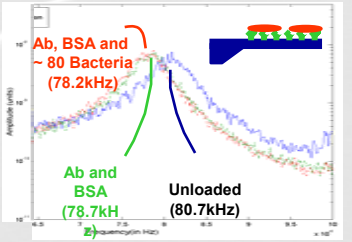
Micro-fluidic Cell Culture Arrays





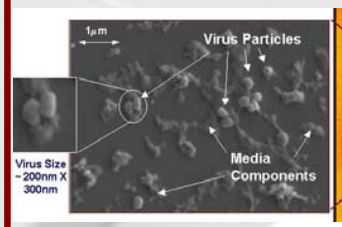
Rapid electrical detection and characterization of cells with on chip dielectrophoretic cell sorting

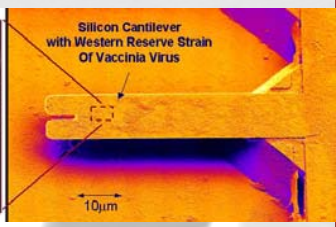
Resonant Cantilevers for Biological Sensing Applications



Detection of bacterial agents and binding

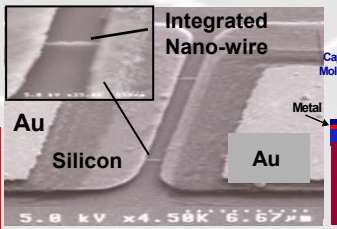
Micro/Nano-mechanical Cantilevers for Virus Detection

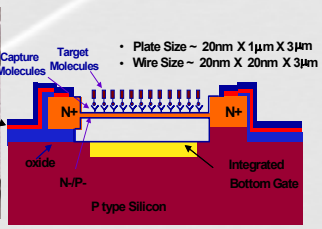




Technology development for the rapid detection of virus particles from air

Integrated Bio-Molecular Sensors





Bio-sensors with electronic output, capability of dense arrays integrated with ULSI silicon, direct Label Free detection of DNA and Proteins

Team:

- Prof. Rashid Bashir
- Three Specialist Senior Researchers
- Nine Graduate Students
- On-going Summer Students

Collaborators:

Ag& Bio Engr., Biomedical Engr., Biology, Chemical Engr., Electrical & Computer Engr., Food Science, Medicinal Chemistry

Funding:

US Department of Agriculture, NASA, NSF Career Award, National Institute of Health, DARPA

Outreach:

Undergraduate and High School Student Projects, Technology Commercialization

Center Affiliations at Purdue:

- Birck Nanotechnology Center
- Bindley Biosciences Center
- NASA Institute of Nanoelectronics and Computing
- USDA-Food Safety Engineering Center

Positions:

Post-doctoral positions available, please visit web-site

Laboratory of Integrated Biomedical Micro/Nano-Technology and Applications (LIBNA)

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