

# Intelligent Microsystems Laboratory

**General interests** Micro- to meso-scale systems (sensors, actuators, fluidics, etc.) for biological, medical and environmental monitoring/treatment utilizing electronic/optical device technology

**Self-calibrating metabolites sensors** Autonomous sensors with minimal human intervention (oxygen, glucose, lactate, pH, etc.) with integrated self-calibrator

**Biodegradable/bioactive sensors and actuators**

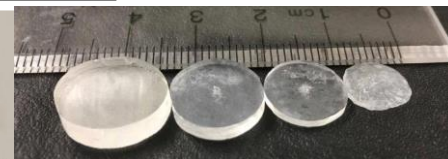
- Temporary (opto)electronics (chips, fibers) based on biodegradable/bioactive materials (ceramics, metals, polymers) with intended lifetime eliminating the need of removal surgery
- Sensors for biochemical (oxygen, glucose, lactate, pH, etc.) and biomechanical (pressure, stress, flow, etc.) parameters
- Actuator (treatment) for cancer (photodynamic therapy), wound healing/bone regeneration (drug delivery).



**Wearable skin patch sensors (smart dressing) for metabolites monitoring by smartphones**



**Flexible sensor strip for wearable biomedical monitoring**



**Biodegradable implantable devices based on water-soluble glass materials**

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**Funding history**

- NSF (National Science Foundation)
- NIH (National Institutes of Health)
- USDA (United States Department of Agriculture)
- NASA (National Aeronautics and Space Administration)
- IEEE Instrumentation & Measurement Society

**Keywords**

- Bioinstrumentation, sensors, solid-state devices, microsystems, MEMS, 3D-printed devices, nanotechnology applications

**Recognitions**

- NSF Career award
- IEEE Sensors Journal Associate Editor
- IEEE, SPIE Senior Member