



ILLINOIS INSTITUTE OF TECHNOLOGY

**International Center
for Sensor Science and Engineering**

Mission: Bridging the gap between innovative research and application

ICSSE Center Meeting Nov 18, 2017

- (1) Introduction of members (Each member will have 3-5 minutes for self introduction.
- (2) Updates and proposed future plans.
- (3) Social and networking.



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**International Center
for Sensor Science and Engineering**

- The Mission of the Center is to **foster communications** within the scientific and engineering community about sensors and exchange experiences with **academia and industry**; provide an **interdisciplinary** environment for broader areas of sensor research. The research outcome will benefit the society and improve the quality of life through a **cleaner environment, more efficient energy usage, earlier diagnosis and effective treatment of diseases, and safer food**.
- The goal of the Center is to provide a platform for scientists and engineers with **common interest and diverse expertise** to exchange ideas, establish collaboration, educate students and develop projects to solve the real-world problems.

<http://cos.iit.edu/icsse/>




INTERNATIONAL CENTER
for
SENSOR
SCIENCE and ENGINEERING




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International Center for Sensor Science and Engineering

- **Illinois Institute of Technology** is a private, technology-focused, research university offering undergraduate and graduate degrees in engineering, science, architecture, business, design, human sciences, applied technology, and law.
- Current enrollment: ~3000 UG, 3300 MS, 750 J.D., 620 PhD.
- ICSSE is one of the 24 research centers at IIT, founded in 2003.
- Currently 19+ members from academia and industry; including two international members. More are in contact.



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Updates and proposed future plans:


- Website: <http://cos.iit.edu/icsse/>. The website is the window of the Center. It has been updated frequently to reflect the rapid growth in the past couple of months. The website is maintained by James Maciukenas at the College of Science.

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About ICSSE Members & Expertise Facilities & Capabilities Publications Events Contact

About ICSSE



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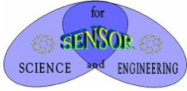
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- **Proposed research plan** – monthly meetings (second last Friday afternoon? ~ 2h?)
 1. Research presentations – by researchers, postdocs and students; rotating among the members; 3 presentations each time (~30 min each);
 2. In the format of webinar to accommodate members at the remote sites (we have members at St. Louis, in China, Romania, and potential members from CA, MN, other countries);
 3. Social and networking, ~ 30 min., for developing potential collaborations.


- **Proposed research plan** – developing joint proposals

Identify the real need → brainstorm (expertise) → address the challenges with innovation → seek federal funding

 1. Collaborative proposals with interested parties;
 2. Larger group proposals in core areas (identify core areas based on combined expertise: environmental, diagnostic, food safety, smart sensors);
 3. Students or postdoc support grants.




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<https://grants.nih.gov/grants/guide/pa-files/PA-16-303.html>, STTR
https://nsf.gov/funding/pgm_summ.jsp?pims_id=505362, STTR

The STTR program is intended to stimulate a partnership of ideas and technologies between innovative small business concerns (SBCs) and non-profit research institutions through Federally-funded research or research and development (R/R&D). By providing awards to SBCs for cooperative R/R&D efforts with non-profit research institutions, the STTR program assists the small business and research communities by commercializing innovative technologies.



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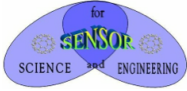


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- **Proposed education plan** – potential establishment of a program
 1. Graduate level program;
 2. New course offering :
CHEM 610-01/CHEM497-01: Special Topics in Analytical Chemistry: Sensor Science and Technology

Sensor development is an interdisciplinary area, combining chemistry and biology with physics, chemical and electrical engineering. This course is designed for students to attain a broad and in-depth acquaintance with the mechanism, platform and targets of various sensors, with a focus on chemical sensors and biosensors. Topical concepts covered include: sensor components and characteristics; synthetic, biological and biomimetic materials used in sensor development; miniaturization and nanotechnology involved in sensor fabrication; signal transduction methods in sensing. Students will have the opportunity to interact with industrial and academic sensor experts who will be invited to deliver guest lectures. Students will be required to partner with others and consult with academic and industrial scientists to design sensors of their own interests as a final project for assessment. The course is intended for graduate students and senior undergraduate students.

 3. Exchange students program;
 4. Students support program – internship, co-op.



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Kilpatrick Lecture Symposium

Topical field in 2017: Sensor Science and Technology


Time: April 10, 2017.

Speakers:


Prof. Eric Anslyn, UT Austin,
Differential sensing: an array of cross-reactive sensors are used to create patterns that are diagnostic of individual analytes or the consistency of complex mixtures.

Prof. Rashid Bashir, UIUC,
Micro/nano-fabrication for biosensors: detection of viable pathogens, DNA methylation.

Prof. Frances S. Ligler, NC State U,
Associate editor of analytical chemistry and on editorial/advisory boards for Biosensors & Bioelectronics, Analytical Bioanalytical Chemistry, Sensors, Open Optics, and Applied Biochemistry and Biotechnology.



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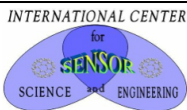
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- **Proposed research/education plan** – Center proposal


Countermeasures Against Chemical Threats (CounterACT) Research Centers of Excellence (U54): <https://grants.nih.gov/grants/guide/pa-files/PAR-16-329.html>

Integrative Graduate Education and Research Traineeship
<http://www.igert.org/public/about>

Science and Technology Centers (STCs): Integrative Partnerships
<https://www.nsf.gov/od/oia/programs/stc/>



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Future Efforts

- Expand membership, especially to industry, other departments and experts in other countries, to establish the core expertise in sensor research.
- Promote the Center's visibility and sensor research as a whole (Logo re-design, IPRO, workshop, etc.)
- Organize and identify the Center's available facilities to facilitate collaborations.
- Host periodic discussions/seminars among members' groups to exchange ideas and encourage collaborations.
- Develop the graduate program. (joint course development and offering)