Lehigh University Establishes Interdisciplinary Research Institutes

Three new research institutes at Lehigh University will catalyze crucial research in areas in which the university can take a leading position on the national and international stage, including: materials and devices, data and computational models, and infrastructure and energy.

BETHLEHEM, Pa. (PRWEB) April 17, 2018 -- Lehigh University today announced the formation of three Interdisciplinary Research Institutes (IRIs): the Institute for Functional Materials and Devices, the Institute for Data, Intelligent Systems, and Computation, and the Institute for Cyber–Physical Infrastructure and Energy. These institutes will be supported by a portion of Lehigh’s commitment of more than $150 million for interdisciplinary activities, from University sources and current fundraising efforts.

Lehigh’s IRIs will create communities of scholars and will catalyze crucial research in areas in which Lehigh can take a leading position on the national and international stage. Importantly, these are areas where Lehigh will make lasting societal contributions.

The IRIs are one of the ways the University will realize its vision to build a stronger, more dynamic Lehigh. The University will commit more than $150 million toward interdisciplinary research and education with investments focused on faculty and student talent, new research, and academic programs that collaborate across colleges, and the expansion of campus facilities dedicated to interdisciplinary research and learning.

“The power of interdisciplinary collaboration is central to Lehigh’s vision and culture,” says John Simon, President, Lehigh University. “Interdisciplinary research is society’s best hope for addressing our most vexing challenges. Lehigh’s investment in this space is a critical component of our commitment to educate students and create knowledge that will have a lasting impact on society.”

“These IRIs will bring Lehigh faculty members and students together in interdisciplinary teams that are positioned to solve hard problems at the intersections of disciplines,” says Pat Farrell, Provost, Lehigh University. “They have already attracted faculty members from all of our colleges who are committed to teaming around such problems and to enhancing our interdisciplinary research culture. They will also provide strong connection points to our industrial and other external partners.”

The themes and structure of the IRIs emerged through of a faculty-led envisioning process that was initiated in the P.C. Rossin College of Engineering and Applied Science, and included faculty participation from Lehigh’s Colleges of Arts and Sciences, and of Business and Economics.

“Through our envisioning process, we gathered thoughtful feedback from across our community that set targets for strategic growth and focused investment in our future,” says Stephen P. DeWeerth, professor and dean of P.C. Rossin College of Engineering and Applied Science. “The IRI themes were selected in some of the areas in which Lehigh can broadly impact society, based on our existing strengths and on our future investments. The IRIs will address interdisciplinary research challenges through the facilitation of interdisciplinary teaming, the incubation of big ideas, and the realization of these ideas through large-scale, extramurally funded projects. The institutes will also assure Lehigh’s prominence across these themes, promoting our thought leadership and linking us to a robust set of external stakeholders.”

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Lehigh’s three new IRIs are:

**Institute for Functional Materials and Devices (I-FMD)**
Innovative new materials and devices will underpin the solution to many challenges facing society, from detecting and treating disease, to implementing large-scale renewable energy sources, to securing food and fresh water for all. In order to address these challenges, I-FMD brings together Lehigh’s interdisciplinary expertise in the synthesis, fabrication, processing, and characterization of engineered materials including semiconductors, metals, ceramics, composites, polymers and other soft materials. These materials are integrated into sensors, actuators, and other devices that have critical functionality across mechanical, electronic, photonic, and chemical domains. I-FMD will identify and address innovative solutions to societal grand challenges through interdisciplinary teams focused around material and device functionalities. The Institute also coordinates nanofabrication and materials-characterization facilities that enable cutting-edge research as well as deeper engagement with university and industry partners.

**Institute for Data, Intelligent Systems, and Computation (I-DISC)**
The analysis of complex and massive datasets and the development of sophisticated computational models are essential to our understanding and prediction of complex phenomena and systems associated with personalized medicine, healthcare delivery, transportation systems, social networks, the human brain, global climate, and international economic development. I-DISC builds upon the foundation of Lehigh research expertise in areas such as machine learning, optimization, probabilistic modeling, data-driven decision making, high-performance and data-intensive computing, statistical signal and image processing, data representation and management, modeling and simulation, robotics and computer vision, business and management technology, and privacy and security. Teams of researchers will combine fundamental data and computational approaches with those focused on critical applications, utilizing core high-performance computing and cyber–physical systems facilities. I-DISC will create a fertile space for collaboration with industrial, academic, and governmental partners to attack some of the most pressing problems in technology and society.

**Institute for Cyber–Physical Infrastructure and Energy (I-CPIE)**
Infrastructure systems – such as those that underpin living and working spaces, energy production and delivery, transportation, and communications – have a profound impact on the human condition. Rapid technological and scientific advancements related to the built environment are bringing significant improvements to our quality of life. I-CPIE will develop, optimize, and understand the cyber and physical components of infrastructure and energy systems that support all aspects of modern society. The Institute will expand Lehigh’s leadership in areas including smart infrastructure for connected communities, sustainable energy delivery systems, cybersecurity for infrastructure and energy, and infrastructure systems risk and resilience, building on the University’s broad expertise across engineering and computing, natural and social sciences, and business and economics. I-CPIE will also build its research through the expansion of existing industrial and university partnerships and through the utilization of world-class core facilities.

Although today marks the formal launch of the IRIs, each Institute is already in the process of building specific teams, hosting workshops, and connecting with key industry and academic personnel. For more on each Institute, including Lehigh faculty listings, research highlights, and more, please visit [www.lehigh.edu/IRI](http://www.lehigh.edu/IRI).

**About Lehigh University:**
Lehigh University, located in Bethlehem, Pa., is recognized among the nation’s premier research universities, offering a rigorous academic community to nearly 7,000 undergraduate and graduate students. The university was founded in 1865 by Asa Packer, an industrial pioneer, entrepreneur and philanthropist. Lehigh has four
colleges: the P.C. Rossin College of Engineering and Applied Science, the College of Arts and Sciences, the College of Business and Economics, and the College of Education, which have earned a reputation for their interdisciplinary approach to learning and research.
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