

CIREP 2021

Celebrating
International
Research and
Education
Partnerships

June 2-3, 2021 from 8:00 AM to 12:00 AM EDT

Digital Agenda

Promoting sustainable international
partnerships in research and education.

Organization Committee

Prof. Shashank Priya
Penn State University
Ms. Bethann Hassinger
Penn State University
Ms. Jade Honey
Penn State University
Ms. Sadie Spicer
Penn State University

Prof. Mike Lanagan
Penn State University
Mr. Marcus Fish
The American Ceramic Society
Ms. Belinda Raines
The American Ceramic Society
Ms. Jennifer Leedy
Penn State University

Prof. Larry Nagahara
Johns Hopkins University
Prof. Jenni Evans
Penn State University
Prof. Jian Hsu
Penn State University
Ms. Heather Dehnel
Penn State University



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Celebrating International Research and Education Partnerships (CIREP 2021)

June 2 – 3, 2021

Online link will be emailed to registered attendees

Hosted by: Penn State University, University Park, PA

Workshop partners: American Ceramic Society, Johns Hopkins University

The 20th century features the shift from an industrial age to an information age, which has accelerated the opportunities for international research and education partnerships. Global connectivity is no longer an issue, and in this past year, the ability to interact with audiences across a wide range of geographies using multimedia tools has grown tremendously. This workshop is being organized to celebrate the international relationships, to share learnings and outcomes, to identify remaining barriers and to develop strategies to address them.

CIREP 2021 will be held as a virtual workshop. Attendance is by invitation only. If you would like to attend this workshop, please submit the online form available at this link:

<https://sites.psu.edu/priya/events/cirep2021/>

Below are discussion points for workshop attendees (references are included at the end):

- 1. Significance of international collaborative research activities:**
 - a. Given the increasing complexity and fast pace of scientific research and technology development, there is a growing recognition that international and interdisciplinary collaborations are key to meeting the projected technology roadmaps and provide required workforce.
 - b. International partnership greatly facilitates knowledge flow; enabling the researchers to share their ideas and study the complex subjects from multiple perspectives. This combination often provides innovative pathways for solving cross-disciplinary topics.
 - c. Partnerships provide mechanism to break the resource limitations on expertise, facilities, funding, and talent to tackle challenging scientific problems.
 - d. Partnerships maximize the outcome of individual researchers by scaling up the input in a collaborative environment.
 - e. International collaboration avoids fragmentation of research investment, leading to the high-quality convergent research with critical mass, and success with clear tipping points.
 - f. The ability to scrutinize, debate, and share experiences is essential for academic and scientific accomplishment. Constructively challenging accepted opinions and ideas is central to their development, and international collaborations help to facilitate this.
 - g. Partnerships enable establishment of new opportunities for industry through participation in global value chains and access to new and emerging markets.

- 2. Significance of international collaboration in education, student training and work force development:**
 - a. As science and technology, engineering facilities, human resources, and various professional expertise are continually spreading all over the world, it is particularly important to cultivate a large population of globally engaged STEM students who are able to adapt and share their knowledge in the international environment.

- b. International collaborations provide an opportunity to promote the social, cultural, and ethical competencies of faculty and students engaged in the collaborative research work.
- c. In the process of continuously solving complex problems with global social impact, it is necessary to train highly inclusive engineers and technicians. This need can be achieved through international cooperation that helps participants in building the social and cultural capabilities and global networks necessary to achieve this goal.
- d. Exposing students (via student exchange programs) to the international research community at a critical stage in their careers serves to establish international networks to bolster their professional development and leverage domestic and international resources for maximum benefit.

3. Challenges in global collaboration and strategies to promote international partnerships:

- a. Overcoming language barriers between overseas colleagues.
- b. Developing new collaboration infrastructures in response to unexpected crisis such as a pandemic or natural disaster, via online conference, virtual laboratory, and virtual/augmented reality technologies.
- c. Solving intellectual property disputes by creating appropriate legal platforms for international partnership.
- d. Building collaborating teams with committed research colleagues sharing a unified vision and objectives, visionary leadership, mutual respect, and willingness to recognize other's contributions.
- e. Increase in scrutiny in collaborating on certain topics with certain countries and balancing that with open collaboration.
- f. Establishing the appropriate framework of international partnership that specifies important operation strategies such as a decision-making mechanism and formal agreements on the range, type and assessment of collaborative activities.
- g. More support from governments and funding agents to ensure that policy development and program delivery will match the great momentum that international collaboration has recently gained in global research and education.
- h. Experience has shown that establishing an effective university partnership requires persistent effort. This persistence includes long-term contact, a full understanding of the culture and goals of each other's institutions, and ensuring ethics and standards compatibility in cooperation.
- i. In industry practice, the internationalization of research and development has been proven countless times to help improve the innovation and competitive performance of enterprises on a global scale. Nevertheless, it becomes very intricate on how to control the degree of internationalization of research and development, how to create effective geographical diversification and international policies of R&D cooperation and integrate them into the strategic direction of enterprise development. All above issues will have a decisive impact on the benefits and costs of the internationalization of R&D.

4. Facts:

- a. In 2018, slightly more than one out of five global science and engineering publications had coauthors from multiple countries.
- b. For many research institutions world-wide, most research positions are now announced internationally in order to attract the best candidates with academic quality and relevance. In Norway, for instance, 29% of scientific positions are currently held by foreign researchers, which is an increase from 18% ten years ago.

- c. Since World War II, the United States has always been the shrine in the minds of many scientific researchers. Long-term studies on international scientific cooperation has shown that only countries that are fully open in thought and academics can have strong science. Those countries that accept visitors and encourage researchers to participate in foreign technical cooperation, and those countries that advocate cross-border research cooperation and provide adequate funding for international projects are always able to produce better science and show the greatest potential for innovation.
- d. European University Association (EUA) recently announced its vision for 2030 as University without Walls, stressing the importance for the academic community to reach out and open their doors to the world with a readiness to learn from others while standing firm on core values.
- e. In the 21st century, international collaboration has proven to be inevitable on many expensive, unrepeatable projects—CERN (European Council for Nuclear Research) and the Human Genome Project being prime examples.
- f. Recent statistics show that among multiple disciplines, large teams with a background in international cooperation are often the fastest growing modes for research capabilities and output. The most striking feature is that the research outcomes are often related to more and more authors and country affiliation.
- g. From smallpox to Ebola to Covid-19, international collaboration in health and science has historically been a major success. It has led to breakthroughs and advances we could not have imagined if countries had pursued it alone.
- h. A team of engineers, physicians, computer scientists and others at the Massachusetts Institute of Technology have been working on a low-cost ventilator. Its open-source design was taken up by a group of Indian engineers (who develop robots) in a race to build ventilators to ease the country's shortage.
- i. The Institute Pasteur in Dakar, Senegal has been working closely with the British biotechnology firm Mologic to develop a new form of rapid test kits for COVID-19, to be made in and distributed across Africa from its custom-built DiaTropix facility.
- j. Promising examples of international partnership include several projects currently active during the coronavirus outbreak, such as the African Coalition for Epidemic Research, Response and Training and the Partnerships for Enhanced Engagement in Research, a model of a North-South scientific collaboration.⁸
- k. An overwhelming 94% of the world's 1000 largest corporative innovators conduct elements of their R & D programs abroad.
- l. At the US National Science Foundation, the program of Partnerships for International Research and Education (PIRE) has been developed to catalyze a higher level of international engagement in the U.S. science and engineering community. Another program, The International Research Experiences for Students (IRES), focuses on active research participation by undergraduate and graduate students in high quality international research, education and professional development experiences in NSF-funded research areas.



¹ NSF ERCs and International Collaboration Rationale, <https://erc-assoc.org/international-collaboration-resources/international-collaboration-rationale>

² PROGRAM SOLICITATION NSF 20-598: International Research Experiences for Students (IRES)

³ “Why are International Collaborations so Important For Universities?,” <https://www.qs.com/why-are-international-collaborations-so-important-for-universities/>

⁴ Nuria E. Hurtado-Torres, J. Alberto Aragón-Correa, Natalia Ortiz-de-Mandojan, “How does R & D internationalization in multinational firms affect their innovative performance? The moderating role of international collaboration in the energy industry,” *International Business Review* 27 (2018) 514–527

⁵ Jan Petter Myklebust , “29% of scientific positions held by foreign researchers,” *University World News*, 19 February 2021

⁶ Christopher Llewellyn Smith , “Knowledge, Networks and Nations: Global Scientific Collaboration in the 21st Century,” Royal Society report on the state of global science

⁷ David Hsiehchen, Magdalena Espinoza and Antony Hsieh, “Multinational teams and diseconomies of scale in collaborative research,” *Science Advances* 18 Sep 2015, Vol. 1, no. 8, e1500211

⁸ Mukhisa Kituyi, Secretary-General, United Nations Conference on Trade and Development (UNCTAD), “COVID-19: Collaboration is the engine of global science – especially for developing countries,” *World Economic Forum*, 15 May 2020

⁹ Jaruzelski, B., Schwartz, K., & Staack, V. (2015). *The 2015 global innovation 1000: in-novation’s new world order* (Study report) <http://www.strategyand.pwc.com/reports/2015-global-innovation-1000-media-report>. (Accessed 03 December 2016).



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via Zoom

Visit Our Website to Register (Required):

<https://sites.psu.edu/priya/events/cirep2021/>

Day 1		
8:00 am – 8:15 am	Opening Remarks and Workshop Overview	Dr. Shashank Priya , Associate Vice President of Research, Penn State University
8:15 AM – 8:45 AM	Title/Keynote Speaker	Dr. Nastaran Zahir , Chief, Cancer Training Branch Center for Cancer Training National Cancer Institute
8:45 AM – 9:15 AM	Keynote Speaker - International Collaborations: Taipei Tech Experience	Sea-Fue Wang , President Taipei Tech
9:15 AM – 9:30 AM	Enhancing International Research through University/Industry Research Consortia	Dr. Elizabeth Dickey , Carnegie Mellon University, President Elect of The American Ceramic Society
9:30 AM – 9:45 AM	Partners to Innovate: to Innovate in this world, we must dream.	Dr. Chris Housmekerides , Senior Vice President, Research & Development Hygiene at Reckitt
9:45 AM – 10:00 AM	Break	
10:00 AM – 10:15 AM	Title TBD	Dr. Denis Wirtz , Vice Provost for Research, Johns Hopkins University
10:15 AM – 10:30 AM	The wide roads and narrow paths of international scientific partnerships	Dr. Christina von Haaren , Vice-President for International Affairs and Sustainability, Leibniz University, Germany
10:30 AM – 10:45 AM	Siemens PhD Engagement Models	Mr. Arturo Pizano , Siemens, Program Manager, University Relations
10:45 AM – 11:00 AM	Introduction of domestic and international cooperation of Korea Institute of Science and Technology (KIST)	Dr. Jiwon Choi , Professor at Division of NT-IT convergence, Korea Institute of Science and Technology (KIST)
11:00 AM – 11:55 AM	Panel 1 Discussion – Research partnerships – across academia, national labs, and industry	Moderator: Dr. Shashank Priya , Associate Vice President of Research, Penn State University

		<p>Dr. Emmanuel Maillet, Technology Manager at GE Research, Niskayuna, New York</p> <p>Dr. Tatsuki Ohji, Fellow at The National Institute of Advanced Industrial Science and Technology, Nagoya, Japan, Past President of The American Ceramic Society</p> <p>Mr. George Kovoov, Sr. Vice President Sales, PepsiCo Global Food Service</p> <p>Mark Mecklenborg, Executive Director, The American Ceramics Society</p> <p>Dr. Jenni Evans, Director of the Institute for Computational and Data Sciences, Penn State University</p>
11:55 AM – 12:00 PM	Closing Remarks	Dr. Shashank Priya , Associate Vice President of Research, Penn State University

Day 2		
8:00 AM – 8:05 AM	Opening remarks	
8:05 AM – 8:35 AM	Keynote Speaker - Enhancing research and education through international partnerships	Dr. Marc Parlange , Provost, Monash University, Australia
8:35 AM – 9:05 AM	Keynote Speaker - Catalyzing U.S. Higher Education to Build a Better post-Pandemic Future through Global Science and Engineering Collaborations	Dr. Shekhar Bhansali , Division Director, Electrical, Communication and Cyber Systems, National Science Foundation
9:05 AM – 9:20 AM	Scientific Team-Work Enables Accelerated Discoveries and Translation	Dr. Clive Randall , Director, Materials Research Institute, Penn State University
9:20 AM – 9:35 AM	Title TBD	Sofi Bin-Salamon , AFOSR
9:35 AM – 9:50 AM	International Cooperations of Kiel University	Dr. Eckhard Quandt , Vice President of Research, University of Kiel, Germany
9:50 AM – 10:05 AM	Nurturing Fruitful Research Collaborations from an Industrial Perspective	Dr. Dana Goski , President of the American Ceramic Society, and Vice-President of Research &

		Development at Allied Mineral Products, LLC
10:05 AM – 10:20 AM	Break	
10:20 AM – 10:35 AM	A Perspective On the I-U Engagement Experience from a Japanese Electronic Component Manufacturer	Jerry Kolbe , Director, Corporate Technology and Innovation, Murata Electronics Americas
10:35 AM – 10:50 AM	Title TBD	Paul Camera , Senior Manager, Equipment Development and Trade Asset Programs Commercial Excellence, Nestle
10:50 AM – 11:05 AM	JHU Whiting School of Engineering's International Experience and Possible Academic Initiatives and Opportunities That WSE Can Currently Offer to Its International Partners	Dr. Hedy Alavi , Assistant Dean for International Programs, Whiting School of Engineering, Johns Hopkins University
11:05 AM – 12:00 PM	Panel 2 Discussion - Workforce development, federal programs, and industry centers	<p>Moderator: Dr. Larry Nagahara, Associate Dean of Research, Johns Hopkins University</p> <p>Dr. Roger Brindley, Vice-Provost, Global Programs, Penn State University,</p> <p>Dr. Holger Blume, Vice-President for Research and Transfer, Leibniz University, Germany</p> <p>Dr. Franklin A. Carrero-Martínez, Senior Director, The National Academy of Sciences, Engineering, and Medicine</p> <p>Dr. Reuben Kraft, Associate Professor, Penn State University</p> <p>Dr. Andreia Pierce, Amazon Web Services</p>
12:00 PM – 12:15 PM	Summary and Planning for CIREP 2022	Dr. Shashank Priya