# NSF Now Funding Phase II of Center for Advanced Research in Drying at WPI; Focus Is on Energy Reduction Innovation

**Worcester, Mass**.—October 6, 2021— Drying is one of the most energy-intensive aspects of manufacturing, and new Phase II funding from the National Science Foundation (NSF) will allow the Center for Advanced Research in Drying (CARD) to build upon five years of successful drying innovations in order to help reduce the considerable energy consumption by manufacturers across varying industries.

“During Phase I, CARD developed novel drying technologies that are currently being transferred to industry," said Jamal Yagoobi, director of CARD and head of WPI's Department of Mechanical Engineering. "The NSF’s new funding will allow us to build upon those significant successes and work to considerably reduce the energy consumption of current drying processes, as well as the carbon footprint of various industry sectors. This Phase II grant will allow CARD to develop more energy efficient processes, and the faculty and students at WPI and the University of Illinois at Urbana-Champaign (UIUC), along with CARD members—who will get to do this critical work—are grateful to the NSF and are confident that the next five years will see growth in our research and diversity within our membership."

Originally funded in 2016, CARD is the first center in the United States devoted to research in drying moist, porous materials such as food and agricultural products, forestry products, chemicals, textiles, and biopharmaceuticals. As an NSF Industry University Cooperative Research Center program (IUCRC), researchers at WPI and UIUC work with its members to dramatically reduce energy usage, carbon footprint, and water usage while also increasing economic competitiveness.

Over the past five years, CARD developed new sustainable technologies, such as novel impinging jet nozzles and sensors, through open collaboration between researchers at both universities and its members including Fortune 500 member companies, startups, industry consortiums and other partners, such as the U.S. Army Combat Capabilities Development Command (DEVCOM) and Massachusetts Clean Energy Center (MassCEC).

“The NSF Phase II funding will allow us to continue this important partnership to develop energy-efficient and sustainable production solutions for the U.S. food industry and other industry sectors,” said Hao Feng, site director of CARD and professor of food and bioprocess engineering at UIUC.

“During Phase II, CARD will continue to be a platform for the training of the next generation graduate workforce; which will have innovative skills in advanced drying technologies and will be well prepared for managing industrial and mission-critical projects,” said Irfan Ahmad, CARD Co-Site/Innovation Director, and a research faculty at the Holonyak Micro and Nanotechnology Laboratory and the department of agricultural and biological engineering at UIUC.”

With the NSF’s approval of Phase II, WPI and UIUC will each receive $100,000 annually for five years. CARD’s goal under this phase is to widen its portfolio to exceed 15 members from food and agriculture, pulp and paper, chemical, textile, electronic, pharmaceutical, and other industry sectors. As an NSF

IUCRC, CARD derives the bulk of its funding from its corporate members, each of which pays an annual membership fee of $50,000.

“Already proven to be uniquely valuable for the industry members, government research labs, and both universities in Phase I, CARD Phase II aims to make a bigger impact to a larger range of industries by leveraging the organic combination of the expertise, talents, facilities, and resources in the industry-academic-government ecosystem,” said Yuxiang (Shawn) Liu, CARD co-site director and associate professor in Mechanical Engineering at WPI.

CARD is one of three IUCRCs established at WPI. The Center for Resource Recovery and Recycling (CR3), part of the university's Metal Processing Institute, and the ROSE Hub (Robots and Sensors for the Human Well-being) have also been funded by the NSF as part of its IUCRC program. Meanwhile, Illinois is home to more than five IUCRCs.

**About Worcester Polytechnic Institute**

WPI, a global leader in project-based learning, is a distinctive, top-tier technological university founded in 1865 on the principle that students learn most effectively by applying the theory learned in the classroom to the practice of solving real-world problems. Recognized by the National Academy of Engineering with the 2016 Bernard M. Gordon Prize for Innovation in Engineering and Technology Education, WPI’s pioneering project-based curriculum engages undergraduates in solving important scientific, technological, and societal problems throughout their education and at more than 50 project centers around the world. WPI offers more than 70 bachelor’s, master’s, and doctoral degree programs across 17 academic departments in science, engineering, technology, business, the social sciences, and the humanities and arts. Its faculty and students pursue groundbreaking research to meet ongoing challenges in health and biotechnology; robotics and the internet of things; advanced materials and manufacturing; cyber, data, and security systems; learning science; and more. www.wpi.edu

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