



WPI

I ILLINOIS

TECHNOLOGY TRAILBLAZERS IN INDUSTRIAL DRYING

Since 2016, the **Center for Advanced Research in Drying (CARD)** has been on the leading edge of novel technologies that make drying more efficient for U.S. manufacturing industries. The only drying research center in North America, CARD's **Mission** is to create groundbreaking tools, technologies, sensors, and artificial intelligence platforms for industrial drying in food and agricultural products, forestry products, chemicals, textiles, and biopharmaceuticals.

CARD STRIVES TO ...

Reduce energy (and water) consumption in drying and related heat and mass transfer processes

Reduce energy and carbon footprint to impact sustainability of companies

Improve product quality while drying faster

Train the next generation workforce for 21st century jobs

10%

Process energy used in American manufacturing is for drying

\$10.5 Billion

Potential savings per year for the U.S. manufacturing industry when implementing newer, more efficient drying technologies

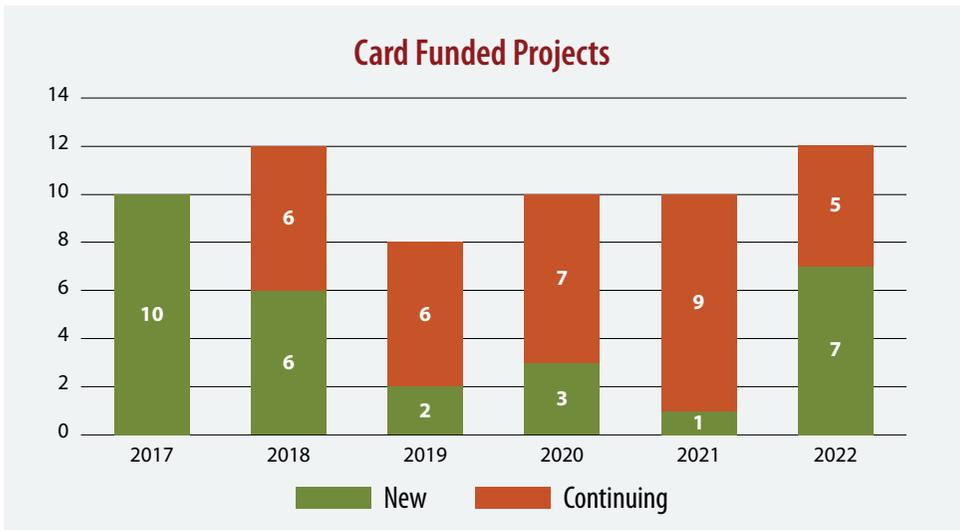
CARD is a National Science Foundation (NSF) Industry University Cooperative Research Center (IUCRC) designed to make university research at Worcester Polytechnic Institute (WPI) and the University of Illinois at Urbana-Champaign (UIUC, co-site) available to member companies.



“ Finding viable alternatives to the drying process for moist, porous materials is of paramount importance to U.S. competitiveness. The creation of an industry-academic-government partnership provides the opportunity to harness the diversity of resources required to develop solutions within the next few years. Time is of the essence. The Center for Advanced Research in Drying should have the attention of every major company in the U.S. Manufacturing sector. ”

—Edward J. Daniels, retired
Deputy Associate Laboratory Director
Energy Engineering and Systems Analysis
Argonne National Laboratory

CARD ACCOMPLISHMENTS BY THE NUMBERS



40

journal and
conference
publications

5

patents filed
since May 2018

\$500K

available for
funding projects
in 2022

15

students from
the program

Members and Affiliates



Impact on Capital Hill

- Due to CARD's singular efforts, the U.S. Federal Government has carved out approximately \$10M for research in drying specifically from the Department of Energy's Advanced Manufacturing Office (DOE AMO) budget each year for the past four years.

Major Funding Successes

- "Innovative Food Dehydration Technologies for Improving Product Quality, Energy Efficiency, and Sustainability" with the United States Department of Agriculture: **\$900,000**
- "Novel Energy-Efficient Drying Technologies for Food, Pulp and Paper, and other Energy Intensive Manufacturing Industries" with the United States Department of Energy Advanced Manufacturing Office: **\$3,459,860**, plus **\$450,000** from Massachusetts Clean Energy Center

The goal of these (and any subsequent) grants is to leverage early CARD research to scale-up ideas to higher TRL technologies and, ultimately, commercialization.

JUNE 26–29, 2022: CARD HOSTS THE 22ND INTERNATIONAL DRYING SYMPOSIUM (IDS)

IDS 2022

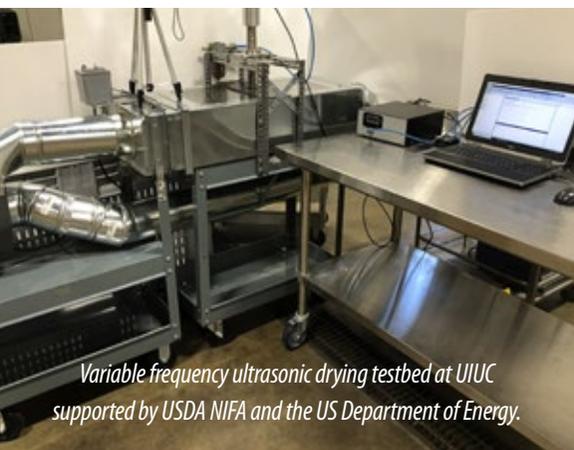
22nd International Drying Symposium

IDS 2022, sponsored by CARD, will be held on the main campus of Worcester Polytechnic Institute. The event will aim to provide the most advanced and comprehensive global forum for disseminating results and data in research, development, and applications in drying/dewatering sciences and technologies.

 wp.wpi.edu/ids2022

LEADERS IN THE FUTURE OF DRYING INNOVATIONS

Over the years, CARD has made great strides in creating novel electrical technologies to improve the efficiency of water removal from semi-moist, porous materials. As we work to advance these innovations even further, we also strive to pioneer new discoveries that can transform the future of drying.



Variable frequency ultrasonic drying testbed at UIUC supported by USDA NIFA and the US Department of Energy.



Smart dryer testbed at WPI supported by the US Department of Energy.

Future research in novel drying technologies leveraging unique electrification processes, pre-treatments that will help dry products faster, and advanced mathematical modeling and simulation is planned.

JOIN CARD

As a CARD member, your organization will join a collective of industry partners and gain access to the latest research, patents, and thought leadership in novel drying technologies that increase efficacy and sustainability in processes such as heating, cooling, baking, dewatering, freezing, spraying, and frying.



To learn more about CARD membership, contact:

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