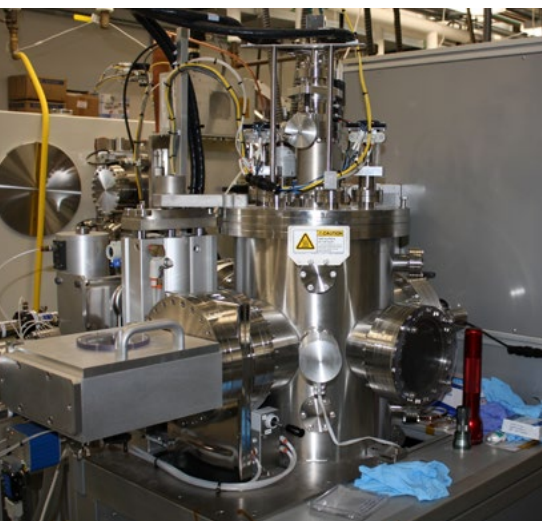


# PROFESSIONAL SCIENCE MASTER'S PHOTOVOLTAICS (PSM-PV)



*Over the past 25 years, the University of Toledo has been an international leader in PV science and technology and has developed world-class expertise and facilities for PV research and commercialization. Numerous faculty members across several departments are actively involved in developing PV materials, devices and systems. Working with a host of corporate partners, the University is positioned to support the development of the PV industry in the State of Ohio, the Great Lakes Region and around the world. To support this endeavor, the Ohio Department of Development created the Wright Center for Photovoltaics Innovation and Commercialization in 2007.*

The Professional Science Master's in Photovoltaics (PSM-PV) prepares students for successful careers in the burgeoning photovoltaics industry. The two year program builds a strong scientific knowledge base and develops laboratory skills and business management practices to prepare the next generation of PV professionals.

Students are exposed to a wide range of cutting edge research activities in laboratories of world-class faculty, and participate in a 24-week corporate sponsored internship that provides real world experience. The program is accredited by the National Professional Science Master's Association.

The Professional Science Master's in Photovoltaics launched in 2010 to address the growing demand for highly skilled PV professionals.

## Professional Science Master's in Photovoltaics Degree Highlights:

- **International reputation in photovoltaics.** Toledo and the State of Ohio have a long history of success in the photovoltaics industry. That history, along with The University of Toledo's expertise in PV science and technology, led to the creation of the [Wright Center for Photovoltaics Innovation and Commercialization](#).
- **High-tech labs and research facilities.** The PSM-PV addresses the materials, processes and devices for converting sunlight into clean electricity. UToledo PV-oriented graduate students address important fundamental and technological principles using state-of-the-art facilities for R&D, including PV materials innovation, deposition and characterization; solar cell device architecture; advanced optical spectroscopy; and solar cell performance and reliability analysis.
- **Research opportunities.** Faculty and students in UToledo's Department of Physics and Astronomy work closely to conduct world-class research. Primary areas of research in PV: device fabrication and characterization, grid integration, materials deposition and characterization, metrology, solar cells and sustainability.

# PROGRAM OVERVIEW

## Professional Science Master's in Photovoltaics

This degree program is designed for students who want to work in the photovoltaics (PV) industry upon graduation.

### The PSM-PV degree program:

- Prepares master's students with a strong foundation in the fundamentals of PV science and technology.
- Complements science education through management course work directly relevant to business aspects of manufacturing. It exposes students to a range of research activities on the UT campus in laboratories of world-expert faculty in PV.
- Places students as interns in PV manufacturing facilities for six months to enhance their practical training and employability as a critical part of the program.

The PSM-PV is designed for students with an undergraduate degree in physics, chemistry, an engineering discipline (e.g. electrical, chemical or mechanical) or an otherwise related field. For the degree of Professional Science Masters in Photovoltaics, a student must complete 37 hours of graduate credit. There is no thesis requirement for this degree; however, students are expected to make an oral presentation based on their research and independent study.

We encourage you to contact individual faculty members directly to discuss research interests and opportunities.

Faculty contact information is available at: [utoledo.edu/nsm/physast/research](http://utoledo.edu/nsm/physast/research)

Faculty Member	Area(s) of Research
Amar, Jacques .....	Theoretical condensed matter physics, materials science and surface physics
Anderson-Huang, Lawrence .	Astrophysics, theory of stellar atmosphere
Bjorkman, Jon .....	Astrophysics, theory of stellar winds and disks, radiation transfer and simulations
Bjorkman, Karen .....	Circumstellar disks, polarimetry and stellar winds
Chandar, Rupali .....	Stellar populations, star and galaxy formation and evolution
Cheng, Song .....	Ion-atom and molecule collisions
Collins, Robert .....	Condensed matter physics, optical properties of solids and thin solid films
Cushing, Michael .....	Astrophysics, low-mass stars and brown dwarfs
Deng, Xunming.....	Materials science, thin films and photovoltaics
Ellingson, Randall .....	Ultrafast laser spectroscopy, photophysics of semiconductor nanocrystals and nanocrystalline films
Federman, Steven .....	Interstellar matter
Gao, Bo .....	Light-atom interactions, Bose-Einstein condensation and many-body interactions
Heben, Michael .....	Nanoscience, materials for energy conversion and storage
Irving, Richard .....	Atomic physics
Karpov, Victor .....	Theoretical condensed matter physics and photovoltaics
Khare, Sanjay .....	Theoretical condensed matter physics and materials science
Lee, Scott .....	Biophysics and high-pressure physics
Medling, Anne .....	Black hole growth and feedback
Medling, Scott .....	X-ray absorption spectroscopy
Megeath, S. Thomas .....	Planet and star formation
Ray, Aniruddha .....	Utilizing nanotechnology and optical imaging for biophysical and medical applications
Podraza, Nikolas .....	Condensed matter and photovoltaics
Smith, J.D. ....	Infrared and extragalactic astronomy
Visbal, Elijah .....	Cosmology simulations
Yan, Yanfa.....	Materials science, condensed matter and photovoltaics

## What to expect when you graduate ...

Graduates of UT Toledo's professional science master's program typically advance to Ph.D. programs or take jobs in the industry.

Graduates of the PSM-PV program have found internships and jobs with: First Solar, Inc., IBM, The U.S. Department of Energy's Solar Energy Technologies Program, NexTronics, Ferro Corp, Owens-Illinois, Radco Industries Infusion Technologies Division, Willard & Kelsey Solar Group, Isofoton, Lubrizol and Shadeplex.

Admission requirements, guidelines and application information can be found at: [utoledo.edu/graduate/apply](http://utoledo.edu/graduate/apply).

If you have questions about the application process, contact 419.530.4723 or [graduateonlineapplication@utoledo.edu](mailto:graduateonlineapplication@utoledo.edu).