

WHY CHOOSE CHEMICAL PHYSICS AT KENT STATE?

“Our graduates are having a significant impact on the industry, and their success shows the value of education in the field of liquid crystals at Kent State.”

Oleg Lavrentovich, Ph.D.
Trustee Research Professor

WITH A DOCTORAL DEGREE IN CHEMICAL PHYSICS YOU WILL:

- Participate in basic and applied research, with world-class faculty, in the emerging research areas of electro-optics devices, negative-index materials, liquid crystal beam steering, biological sensors, organic photovoltaics and nanotechnology, just to name a few.
- Have the opportunity to publish in prestigious journals, present your research at international conferences and patent new technologies.
- Gain hands-on experience and knowledge in a variety of interdisciplinary scientific disciplines including physics, chemistry, mathematics and biology.
- Develop valuable critical-thinking skills that prepare you for challenging work with industry leaders.

Learn basic and applied science of today’s hottest liquid crystal technologies!

The Liquid Crystal Institute, which was started by Glenn H. Brown, is now known as the Advanced Materials and Liquid Crystal Institute (AMLICI). In the history of the institute, which spans more than 50 years, we have trained many specialists. These specialists currently work at innovate high-tech companies, from industrial giants such as Apple, Samsung, Corning, 3M, Motorola and Hewlett-Packard, to local beacons of innovation such as Kent Displays, AlphaMicron, CoAdna Photonics, Hana Microdisplay Technologies and Kent Optronix. Other graduates have become professors at leading academic institutions, entrepreneurs in new technology businesses and research scientists at some of the most well-known research centers in the world.

FOR MORE INFORMATION:

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Visit our website at www.kent.edu/CPIP.



**College of Arts
and Sciences**

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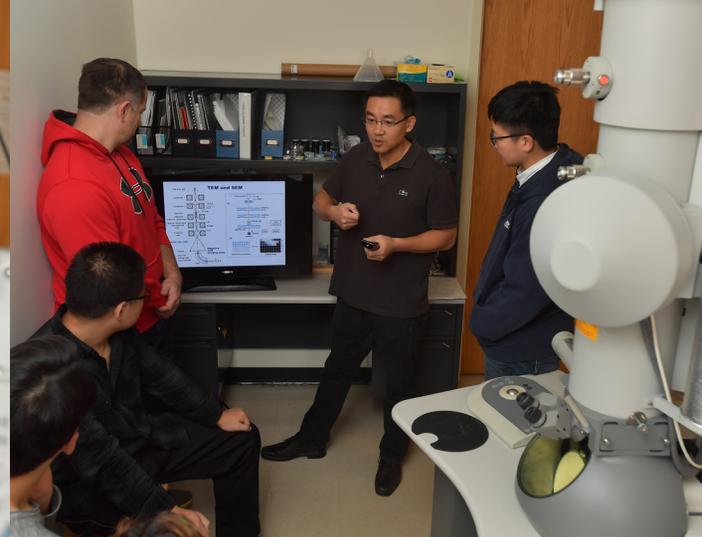
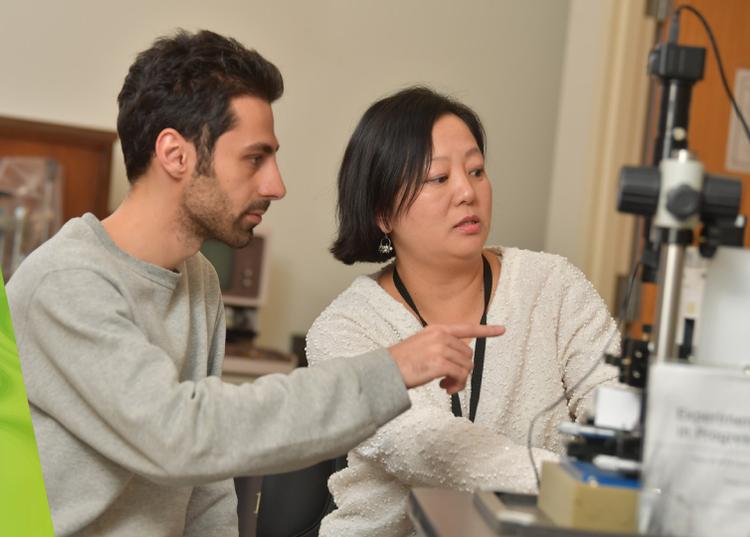
CHEMICAL PHYSICS INTERDISCIPLINARY PROGRAM

in the College of Arts & Sciences



www.kent.edu/cpip

CUTTING-EDGE RESEARCH



YOU USE OUR TECHNOLOGIES EVERY DAY!

Chances are good that the cell phone or music player you may have in your pocket, and the television you last watched were all made with liquid crystal technologies developed here at Kent State. It might even have been designed or manufactured by one of our graduates.

FUTURE APPLICATIONS

Beyond display technology there are many more applications of liquid crystals:

Biomedical: Liquid crystal rubber is flexible and twists like on artificial muscle when exposed to light heat or electric fields.

Food Safety: Biosensors made with liquid crystals provide exquisite sensitivity to the presence of harmful bacteria.

Green Energy: Liquid crystal organic photovoltaic materials promise to improve the efficiency of solar energy conversion.

CPIP FACULTY

Program faculty and students conduct research in soft matters, liquid crystal synthesis and molecular design, liquid crystal materials and properties, lyotropic liquid crystals and bio-related materials, optoelectronics, and nanoscience and nanotechnologies. These important research foci are inherently interdisciplinary.

For more information on faculty, and their areas of research, please visit:

www.kent.edu/CPIP/faculty/

Chemical Physics Interdisciplinary Program

Specific degree requirements and career information can be found on our website-
www.kent.edu/CPIP.

PROGRAM REQUIREMENTS

Doctoral and Master Degree students participate in basic and applied research topics with faculty including physical properties of liquid crystals, liquid crystal display and applications (optoelectronics), theories and computer simulation of soft matter, synthesis and molecular design, lyotropic liquid crystals and membranes, nanoscience and nanofabrication.

Master Degree students are required to complete 30 credit hours of core/elective courses with thesis as an option. Doctoral Degree students are required to complete 90 credit hours (60 credit hours of core/elective courses and 30 credit hours of dissertation).

Greta Cukrov (pictured on cover), CPIP Doctoral candidate

Greta joined CPIP and realized her goal by being involved in challenging cutting-edge interdisciplinary research. Experimental skills acquired at the institute in optics, microscopy and electronics opened opportunities to work in any area of research. With the help of professors she was already able to broaden her knowledge by conducting collaborative research in Germany and Netherlands.



Vinay Joshi
Ph.D. 2018

After working for 6 years in the field of polymer science and engineering, the CPIP program has helped Vinay to pave a new pathway in liquid crystal materials and display applications. After graduation, Vinay hopes to join a research-based U.S. company working on liquid crystal/polymer materials or device applications.



Asad Khan
Ph.D. 2003

Currently a Chief Technology Officer at Kent Dispays, Inc., Asad has been leading the development and commercialization of the "Boogie Board". In 2017 he received the prestigious Prize for Industrial Applications of Physics from the American Physical Society for novel contributions to the physics of bistable, reflective cholesteric liquid crystals, and the commercial applications of pressure-sensitive liquid crystal displays, including switchable windows, eWriters and numerous new products.