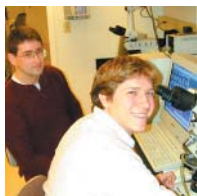


DISCOVER THE POSSIBILITIES



Liquid crystal display research is just one facet of an ever-expanding field of liquid crystal science. Faculty members, researchers and students at the Liquid Crystal Institute are engaging in research that stretches the boundaries of various scientific disciplines including physics, chemistry, mathematics and biology. LCI research groups are currently conducting research on electro-optics devices, negative-index materials, liquid crystal beam steering and biological sensors, nanotechnology, soft-condensed matter theory and simulations, just to name a few. Faculty and students have numerous opportunities to publish and present their research and patent new technologies that lead to some of today's most exciting discoveries and inventions.

Why choose CPIP at LCI?

Kent State University's Glenn H. Brown Liquid Crystal Institute will continue to lead the way in academic research of liquid crystals, as it has for the past 40 years.



The Graduate Chemical Physics Interdisciplinary Program (CPIP) within the Liquid Crystal Institute is consistently providing some of the brightest doctoral students with the education and experience they need to be successful in this new, exciting field. Some CPIP Ph.D. graduates have gone on to 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. Due to the interdisciplinary nature of the program, CPIP students get one of the most well-rounded education and research experiences around.



If you're looking for an education and experience that will position you as a leader in the exciting field of liquid crystals and materials sciences consider applying for the Chemical Physics Interdisciplinary Program at Kent State University.



CPIP Faculty Focuses and Interests

D.W. Allender: Landau theories, lyotropic liquid crystals, biaxial nematics, director modelling, lipid membranes

P.J. Bos: applications of liquid crystals, modeling of electro-optics of liquid crystals, surface alignment

L.-C. Chien: optical compensation films, liquid crystal alignment, liquid crystal/polymer composites, elastomers, electro-optical devices

E.C. Gartland: numerical modeling, applied mathematics, liquid crystals theory and computation, orientational structures and stability of phases of liquid crystals, defects and singularities

A. Jakli: ferroelectricity, piezoelectricity, electro-optics, dielectric properties, structured fluids, soft materials, thermotropic and lyotropic liquid crystals

C. Kim: colloids, emulsions, foams, rheology, microrheology, cell and bio mechanics, cell rheology, complex fluid, dynamics of polymer, lipids, membranes, and monolayer

S. Kumar: biaxial LCs, bent-core, lyotropic, and elastomer LCs, LC alignment, high-resolution x-ray and neutron scattering, electro-optical applications of LCs, LC biomaterials, and nanoscale structures

O.D. Lavrentovich: Electrooptical effects, topological defects, three dimensional imaging, lyotropic chromonic liquid crystals, colloids, biosensors, negative index materials

P. Palffy-Muhoray: Lasing and photonics in liquid crystals, negative index materials, liquid crystal elastomers, pattern formation and materials failure

J.V. Selinger: theory of thermotropic and lyotropic liquid crystals, polymers, elastomers, nanoparticle suspensions, self-assembled lipid microstructures, and related biological materials

R.L.B. Selinger: Soft condensed matter theory and simulation; simulation studies of fracture and plasticity of solids

Q.-H. Wei: Nanobioscience, nanophotonics, micro/nanofluidics, nanophononics, biophysics, soft condensed matter physics, materials with novel structures/properties and micro/nanofabrication

D.-K. Yang: Electro-optics of liquid crystal, liquid crystal/polymer composites, cholesteric and blue phases, liquid crystal displays

H. Yokoyama: Nanotechnology, liquid crystals, surface and colloid science, organic thin films and scanning probe technology

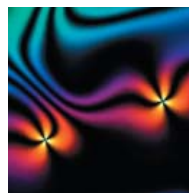
CPIP faculty and associate members have active research programs supported by the NSF, AFOSR, NASA, DARPA, State of Ohio, U.S. and international industrial partners providing research opportunities for students to carry out both basic and applied research.

Application and Financial Assistance

Students who've received undergraduate degrees in physics, chemistry, engineering and mathematics are eligible for admission. Students admitted to the CPIP program receive twelve-month stipends of \$20,350 and a full tuition waiver. Additional merit scholarships of up to \$10,000 per year are available for qualified students. Application information is available at: <http://www.lci.kent.edu/apply.htm> or email: cpip@lci.kent.edu

CPIP Graduate Coordinator:

Robin Selinger: (330) 672-1582
robin@lci.kent.edu



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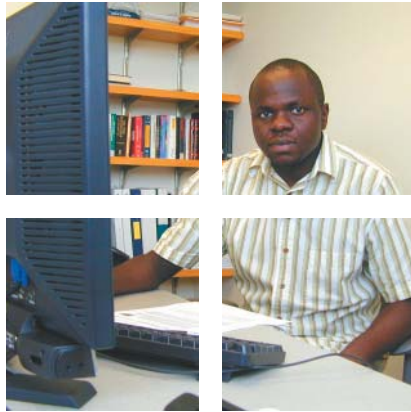
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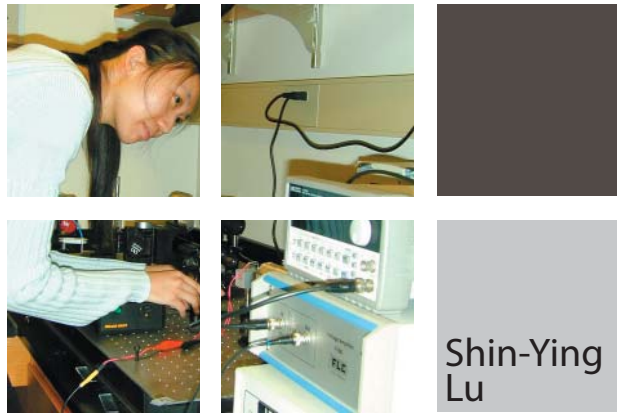
MEET A FEW KENT STATE UNIVERSITY
CPIP STUDENTS

Badel Mbanga



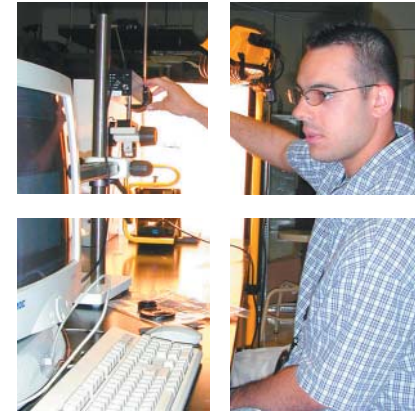
Badel is a fifth-year doctoral student in CPIP and a graduate research assistant in Professor Robin Selinger's group. Joining CPIP was a natural continuation of Badel's academic career after earning a masters degree in display technology from Dalarna University in Sweden. He plans to stay in academics and will seek a postdoctoral position after completing CPIP. He said he would like to start his career in the U.S. and would eventually like to work in his native Cameroon, a developing country in need of well-trained academics. Badel feels that CPIP is a unique opportunity to work in a relatively new, multidisciplinary field with the best scientists in the world. He enjoyed his first two years of CPIP because it gave him the opportunity to do a lab rotation, giving him a well-rounded experience in the program.

Shin-Ying Lu is a fourth-year doctoral student in CPIP and a graduate research assistant in Professor L.-C. Chien's group. Her current research is focused on Electrically Tunable Chiral Materials for Spatial Modulators. She and Dr. Chien own two patents for this research. Shin earned her undergraduate and masters degrees from National Chiao Tung University in Taiwan. She also worked for one year at a display company in Taiwan. She decided to enroll in CPIP to further her education and gain experience in the display field. She feels that the LCI is a great place to study and work on liquid crystals because there are many different research groups within the department. She enjoys the weekly research meetings because of the great interaction between the professor, students and other group members.



Shin-Ying Lu

Thomas Palermo



Thomas is a recent Masters graduate of CPIP and was a graduate research assistant in both Professor Antal Jakli and Professor Peter Palffy-Muhoray's groups. He chose CPIP because he was looking for a graduate program in applied physics and chemistry. Thomas earned his B.S. degree in Physics from Adelphi University. He feels that one of the major assets to the CPIP is that its faculty members come from a wide variety of backgrounds. "There is a lot of other research besides just liquid crystals, including mathematics, advanced physics and chemistry." Thomas said. "So the program gives you a broad education for such a specific topic (liquid crystals)."

Doctoral and Masters Degree students choose from a variety of concentrations within the program, including: Optoelectronics (liquid crystal displays and applications), Physical properties of liquid crystals, Synthesis and molecular design, Lyotropic liquid crystals and membranes, and General Chemical Physics. Students participate in basic and applied research conducted by program faculty at the Liquid Crystal Institute.

"The only world-class center - in my opinion, at least - is Kent State University's Liquid Crystal Institute."
 -- Ken Werner, editor,
 Information Display magazine,
 April/May 1999

The great thing about being a CPIP student is that you have the opportunity to gain experience in not only theoretical and experimental physics, but also chemical synthesis and device applications - all in the relatively short time it takes to earn your doctoral degree."
 -- Dr. Chris Bailey, recent CPIP doctoral graduate