

Engineering at Illinois



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[Corporate](#)

[K-12](#)

Where
else could
you build
your own
polymer
LEDs?



This
spring,
students in
[John
Rogers'](#)
MSE452 lab
course on
Polymers
Characterization

Meena Babu and Kyle Wilcoxon: OLEDs ready for testing at the probe station got an opportunity to get their hands dirty...or at least busy.

“With the help of my graduate teaching assistants, Seokwoo Jeon, and Shraddha Avasthy, we added a new laboratory component this semester in which the students build polymer light-emitting diodes, and test their electrical and optical responses,” explained Rogers, who is the Founder Professor of Engineering at Illinois. “This lab, which is among the first of its type for undergraduates, provides the students with hands-on experience in a cutting edge area of polymer technology that has a large potential for wide-ranging impact in consumer electronics.”

According to Rogers, the goal was to provide the undergraduates with hands-on experience with processing of polymeric conductors, semiconductors, and light-emitting materials. Students gain an understanding of electrical transport and light emission in polymers and become familiar with basic electrical and optical measurement equipment, including probe stations, source meters, oscilloscopes, photodiodes, and related instrumentation.

“Our students fabricate these devices by spin-coating hole transporting and electroluminescent polymers, establishing electrical contacts and hermetically sealing the active areas,” he added. “They measure the current-voltage and intensity-voltage characteristics of devices that they fabricate, analyze the data, and explore trends in behavior

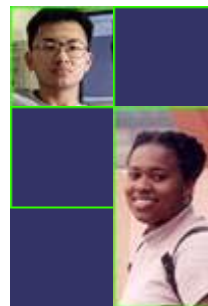
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[External
Affairs](#)



for devices with different active layer thicknesses and emission areas.”

For the fall 2006 term, Rogers plans to use the experimental infrastructure assembled for the this polymer LED lab (i.e. the spin coater and electrical testing setups) to add another new component to the course: an experiment in which the students build and test organic thin-film transistors.

Since the discovery in 1977 of electrically conducting polymers--a discovery that was recognized by the 2000 Nobel prize in chemistry--there has been an explosion of research in polymeric materials for semiconducting, conducting, insulating and even light-emitting layers of electronic and optoelectronic devices. The study of electrical and optical properties in these materials, and the techniques used to create active devices out of them are both exciting areas of modern polymer science and technology.



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Photo #2: Jamie Benson testing demo devices prepared before the lab.

Contact: John A. Rogers, 217/244-4979,

jrogers@uiuc.edu.

Writer: Rick Kubetz, Office of Engineering Communications, 217/244-7716, rkubetz@uiuc.edu.

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