

# **CENTER FOR THE ADVANCEMENT OF PRINTED ELECTRONICS**



**WESTERN MICHIGAN UNIVERSITY**



# WESTERN MICHIGAN UNIVERSITY



## CAPE

where University meets Industry

### CENTER FOR THE ADVANCEMENT OF PRINTED ELECTRONICS

The Center is located within the College of Engineering and Applied Sciences, a 343,000-square-foot, \$72.5 million high-tech facility. The Center is operated and maintained by an interdisciplinary team of faculty and researchers across five engineering departments. The Center's research focuses on the application of materials for the fabrication of printed electronic devices. The CAPE faculty is unique in having expertise for all printing processes for depositing electronic materials. This includes knowledge of the process parameters important to optimize ink transfer and image fidelity during gravure, flexographic, inkjet, offset and screen printing. The CAPE team is devoted to assisting companies seeking new applications for their electronic materials, materials analysis, help in determining best practices for device prototyping, device testing, press optimization for a given application, press material recommendations, and the education and training of key scientists and personal.

#### Printing Technologies\*:

- AccuPress MicroGravure Printing system
- K-Proofer (Gravure&Flexo)
- FujiFilm Dimatix material printer (inkjet)
- Screen Printer MSP-485 w/ Ualign IV vision
- Moser Proofing Press (sheet-fed gravure)
- Prufbau Proofing Press (sheet-fed gravure)
- Cerutti Rotogravure Press (4 units, web-fed)
- Comco Narrow Web Flexo Press (3 units, web-fed)

#### Materials

#### Characterization\*:

- TA Instruments Rheometrics Stress Rheometer AR2000
- Particle Size Analyzer (Nicom 370 and Accusizer 770)
- Perkin-Elmer Differential Scanning Calorimetry Pyris 1 DSC
- Rheometric Scientific Dynamic Mechanical Thermal Analysis DMTA V
- TA Instruments Thermal Gravimetric Analysis Q500
- Raman spectrometer (Solution # 633) He/Ne 633 nm



\* for full list of CAPE instrumentation capabilities visit [www.wmich.edu/engineer/cape](http://www.wmich.edu/engineer/cape)





### Device Testing\*:

- Keithley 6517A Electrometer-High Resistance Meter (peta-ohm capability)
- Keithley 8009 High-Resistance High-Voltage Test Chamber
- Agilent 4338B Milliohm, 1kHz Complex Impedance Measurement
- Keithley 2602 Dual-Channel System Source-Meter , 4-point I-V measurement
- Keithley 4200-SCS Semiconductor Characterization System
- Agilent E4980A High Precision LCR Meter, 20 Hz to 2 MHz
- Agilent 4396B network/spectrum/impedance analyzer 1.8 GHz
- Agilent 4395B network/spectrum analyzer 500 MHz



## THE FACILITY

The CAPE has multiple laboratory printing presses with registration control to enable multi-layer printing with small volumes of ink and minimal waste. Printing can be performed under ambient or controlled conditions. Larger scale multiple unit presses are located in Welborn Hall for scale-up prior to commercialization. Extensive electronic testing equipment is available for the testing of dielectric, conductive and semiconductor materials and junctions between material layers.

Electronic Device Consortium

Membership inquiry

☎ (269) 598-8936    ✉ [margaret.joyce@wmich.edu](mailto:margaret.joyce@wmich.edu)



# **CAPE**

## **“Electrifying” the Printing Industry.**

### **CONTACT**

**Margaret Joyce, Director of CAPE**

**Western Michigan University, CEAS, Parkview Campus  
4601 Campus Drive (A217), Kalamazoo, MI, 49008**

**tel. (269) 276-3514    fax. (269) 276-3501**

**[www.wmich.edu/engineer/cape](http://www.wmich.edu/engineer/cape)**