

**Department of Paper Engineering, Chemical Engineering, and Imaging
College of Engineering and Applied Sciences**

History: The Paper Engineering program, which is a chemical engineering applied to the paper industry, was established in 1948 as the Pulp and Paper Technology program within the Department of Chemistry. In 1953, the program became an independent department and was named Paper Science and Engineering. The paper program is unique in the State of Michigan and one of only ten in the nation. The printing (imaging) program was established in 1950 as Printing Marketing and Management, but merged with the Paper Science and Engineering Department in 1989 to form the Department of Paper and Printing Science and Engineering. The Chemical Engineering program has its genesis in a decision by WMU in 1998 to expand engineering programs to include all the “classical” engineering disciplines. In 2001, the faculty voted and the WMU Board of Trustees approved a name change to the Department of Paper Engineering, Chemical Engineering, and Imaging (PCI), making it the only department in the US that combines papermaking, printing and chemical engineering.

Profile: In addition to the chair, the department has ten faculty members, three faculty specialists, six staff members, and approximately 2400 alumni. There are three industry advisory boards that meet six times annually to help the department to stay current: The Paper Technology Foundation with about \$6M in endowments, the Printing Advisory Committee, and the Chemical Engineering Advisory Board. The paper engineering and chemical engineering programs are ABET accredited. Of the ten paper programs in the US, only WMU and three others are accredited. Graduates are highly sought after by industry, and receive multiple job offers.

A Barrier Coating Symposium, that attracts hundreds of professionals from around the world working in the area of barrier coatings, is offered each year under the direction of Dr. Margaret Joyce. Other industrial seminars include: printed Electronics, basis and advanced Gravure and Flexographic fundamentals.

Programs: PCI offers the following degrees and options:

B.S. in Chemical Engineering

-Options: Energy Management, Inks and Imaging, Life Sciences, Pollution Prevention, and Pulp and Paper

B.S. in Imaging

-Options: Business, Computer, Multimedia, and Substrate

B.S. in Engineering (Paper)

-Options: Process and Environmental

B.S. in Paper Science

M.S. and PhD in Paper and Imaging Science and Engineering

New M.S. and PhD in Engineering (chemical)

Distinctions: PCI undergraduate students receive over \$400,000 in scholarships annually from the Paper Technology Foundation, various endowed Printing Scholarships, OMNOVA Foundation, Ann Arbor Graphic Arts Foundation, Armstrong Company, and many others.

The department has four TAPPI Fellows, which is the highest among any academic department in the world. PCI is the only department in the world that is supported by four industry-type pilot plants in the areas of papermaking, recycling, coating and printing. In addition, the department oversees a print shop that employs many of our students and has numerous on-campus clients, as well as the contract for letterhead and business cards. Our students enjoy paid co-ops and summer jobs, as well as multiple job offers upon graduation with high starting salaries.

Major Challenges: Recruitment of high quality students is the department’s highest priority and major challenge. Almost all our department faculty and staff are involved in recruiting.

Research: Many of our faculty members are world leaders in the areas of paper coating, paper recycling, printed electronics, color management and energy. Current research activities include:

1. Development of RFID Technology for Packaging Materials - Dr. Margaret Joyce, Dr. Dan Fleming, Dr. Sasha Pekarovicova, Dr. Erika Herhrova, and Dr. Marian Rebros.
2. Surface Modified Nano Pigment-Based Sustainable Barrier Coatings - Dr. Margaret Joyce
3. Direct Simulation of Interactions of Flexible Particles/Polymers with Flows - Dr. Dewei Qi
4. Materials and Processes for Printed Electronics - Dr. Sasha Pekarovicova
5. Paper Dewatering and Kraft Chemical Recovery - Dr. John Cameron

Centers: PCI has four centers:

Center for the Advancement of Printed Electronics (CAPE), Dr. Margaret Joyce, Director
 Center for Ink and Printability, Dr. Alexandra Pekarovicova, Director
 Center for Recycling Technology, Dr. John Cameron, Director
 Center for Coating Development, Dr. Margaret Joyce, Director

Data: Department research performance and recruitment over the past six years:

<u>Year</u>	<u>External Cash Research Award</u>	<u>UG Enrollment</u>	<u>Grad Enrollment PhD/MS</u>
02/03	\$183,200	164	5/20
03/04	\$1,512,000	171	9/20
04/05	\$521,200	174	10/13
05/06	\$951,600	209	10/11
06/07	\$874,400	262	11/8
07/08	\$355,000	276	12/8
08/09	\$598,000	318	8/18
09/10	\$797,000	296	6/17
10/11		305	5/13

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Points of Pride

Students, faculty, program and facility

Students

PCI undergraduate students receive over \$400,000 in scholarships annually from the Paper Technology Foundation, various endowed Printing Scholarships, OMNOVA Foundation, Ann Arbor Graphic Arts Foundation, Armstrong Company, and many others.

60 students attended national professional conferences such as TAPPI Paper Conference in Atlanta, American Institute of Chemical Engineering Annual meeting in Nashville, TAGA conference in San Jose, GAA conference in New Jersey and FTA conference in Las Vegas.

80 students had done summer internship or coop experience last Summer (2010)

Faculty

Dr. Parker received the WMU university-wide teaching excellence award

Dr. Tom Joyce, Dr. Margaret Joyce, Dr. John Cameron and Dr. Said AbuBakr are TAPPI fellows

In the process of hiring to new faculty members starting fall 2011

Program

Changed the name of the Imaging Program to Graphic and Printing Science (GPS)

Created a new research center, Center for the Advancement of Printed Electronics with high participation of industry in the consortium.

Signed student and faculty exchange program with TU Dresden in Germany

Developed international engineering summer programs in Germany, Hong Kong, and China

Facility

State of the art facility at Parkview surrounded by 32 companies

New equipment in paper testing from Technodyne

New high precision press for printed electronic research

October 5, 2010