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THE UNIVERSITY of TENNESSEE



College of Engineering

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A Message from the Director

Thank you for your interest in the Center for Materials Processing (CMP) at the University of Tennessee's College of Engineering.

Created as a Center of Excellence in 1985 through the Tennessee Higher Education Commission, the CMP unites students, researchers and industry professionals to promote education, research, engineering, manufacturing and technology transfer in the area of materials.

For over 20 years, the center has developed significant research and academic programs in the field of materials processing through capabilities to draw on the world-class resources at both nearby Oak Ridge National Laboratory (ORNL) and UT.

The center offers opportunities for collaboration with researchers from other disciplines, universities and institutions while allowing CMP's partners in industry and government to reap the benefits of joint research in materials science and processing.

To find out more about how you or your company can benefit from CMP's expertise, contact us at (865) 974-0816 or visit our web site at www.engr.utk.edu/cmp.

Sincerely,
Dr. Carl McHargue, CMP Director

Areas of Expertise

The nature of materials processing research requires an interdisciplinary approach. Faculty and staff from the college's Department of Materials Science and Engineering (MSE) are the most prominent researchers at the center; however, investigators from many other engineering disciplines such as chemical, electrical, mechanical, aerospace and nuclear engineering also participate in CMP research.



In recent years, CMP has produced several technological innovations that have transferred successfully to industry. Patents have been approved for discoveries involving cellulosic microfibers, optical spectroscopy and other technology with valuable industrial applications. The center has also established programs in the emerging field of nanoscience/nanotechnology.

Current research includes the optical and magnetic properties of nanometer-sized metallic particles dispersed in insulators; the feasibility of using dispersions of nanometer-sized ceramics in polymers to increase the quality of artificial knee and hip joint replacements; and the design and operation of the next generation

of submicron-sized motors and electro-mechanical devices.

Other pertinent areas of research include the development of desirable material properties through the control of composition, molecular

structure, and microstructure and the control of variables to ensure proper processing and to produce materials with desired properties that can be reproduced economically and efficiently on an industrial scale.

Additional areas of expertise include:

Materials:

- Metals & Alloys
- Ceramics
- Polymers

Properties:

- Corrosion and Erosion
- Mechanical Properties by Nanoindentation Techniques
- Wettability
- Sterilization
- Cleaning
- Optical/Magnetic Properties

Nanoscience/Technology:

- Opto-electronics materials
- Processing
- Properties

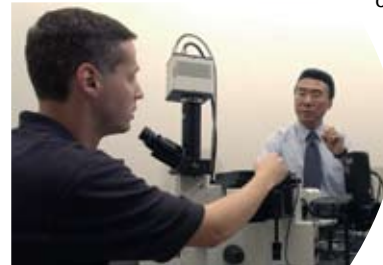
High Temperature Alloys:

- Ordered Intermetallic Alloys
- Advanced Metallic Alloys

Polymer Science & Engineering

Welding & Joining

Biomedical Materials



Facilities and Resources

CMP conducts most of its research through the College of Engineering laboratory facilities at the university. Interaction with ORNL allows faculty and graduate students from the university to participate in collaborative studies with the federal laboratory's staff, who frequently serve as adjunct professors and theses advisers at UT.

CMP is also aligned with UT's Textiles and Nonwoven Development Center (TANDEC) to develop melt processed nonwoven materials. For more information, please visit <http://tandec.utk.edu>.

Advantages for Industry

CMP is constantly working to build partnerships with businesses that can provide the necessary insight to develop the advanced materials processing research and academic programs that will ultimately change the way industry operates.

CMP members enjoy many benefits, including shared-cost research, access to university research facilities and laboratories at a reduced rate, pre-publication access to center reports and collaborations with trained engineering graduate students. Please visit our web site for a list of our current members.



Center Resources

The CMP's administrative staff coordinates activities with College of Engineering faculty and researchers, as well as professionals from member companies and affiliates. These extensive resources allow CMP to easily meet the diverse needs of the center's members.