

COMPOSITE TECH BRIEF

AN INTRODUCTION TO THE CENTER FOR COMPOSITE MATERIALS

Founded in 1974 within the College of Engineering, the Center for Composite Materials (CCM) is an internationally recognized, interdisciplinary center of excellence for composites education and research at the University of Delaware. CCM is dedicated to advancing composites technology through lower costs, higher quality, and reduced risk.

BACKGROUND

CCM began working with materials suppliers and end users in the aerospace, automotive, civil engineering, and durable goods industries in the mid-1970s. Since then, more than 3500 small, medium, and large companies have benefited from affiliation with CCM.

CCM educates engineers, conducts basic research, and provides prompt technology transfer for the composites community. Currently, some 270 people representing three colleges and seven departments, are affiliated with the Center. The students earn their degrees in engineering, materials science, physics, business, and chemistry.

CCM has been an Army Research Laboratory Center of Excellence for Composite Materials Research since 1996, and since 2000 has hosted a second Army COE for technology transition. CCM also hosts the Advanced Materials Intelligent Processing Center funded by the Office of Naval Research. In addition, CCM is a member of the Federal Aviation Administration Center of Excellence for Advanced Materials. Research thrusts include materials and synthesis, mechanics and design, processing science, sensing and control, performance, and multifunctional materials

RESEARCH

Center researchers take a "holistic" approach to composites research.

During its 35+ year history, CCM has developed core competencies in a number of

composites science and engineering areas, including liquid molding (resin transfer molding, vacuum-assisted resin infusion), sensing and control, re-engineering, interphase science,



composites from renewable sources, thermoplastic processing, joining, and cost modeling.

The Center's state-of-the-art composites manufacturing facilities are used by faculty, research staff, graduate and undergraduate students, and visiting scholars from throughout the world. CCM's integrated approach to manufacturing science builds on the convergence of fundamental and applied research, resulting in the intelligent manufacturing of composites.



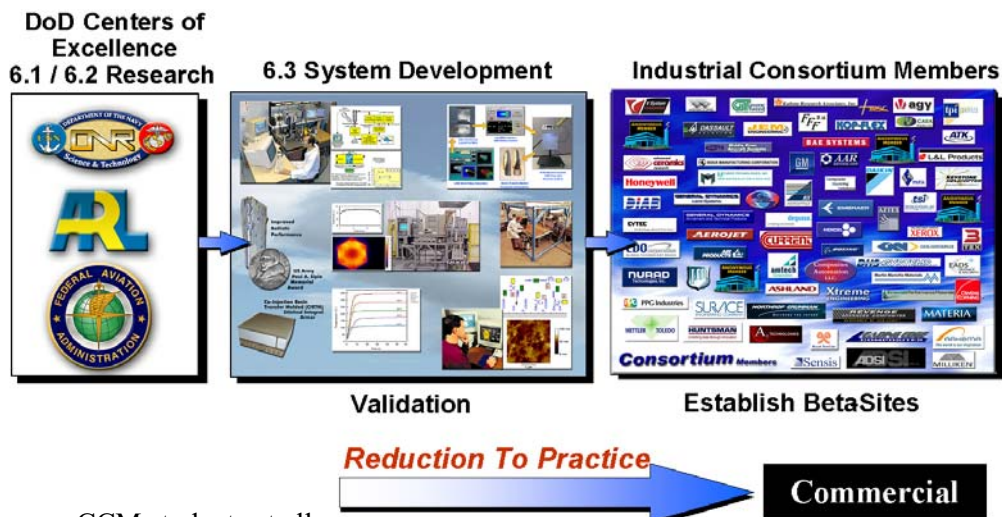
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TECHNOLOGY TRANSFER

Center researchers view industry and government as partners rather than patrons. Technology transfer thus becomes a logical outgrowth of the research rather than a separate activity. CCM's current research programs are being carried out with the support of, and in collaboration with, industry, the U.S. Army Research Laboratory, federal agencies (ARO, ONR, DARPA, DOE, DOT, NSF, NIST, NAS, and others), and the State of Delaware. Examples of recent technology transfer include a number of workshops tailored to the specific needs of our sponsors and transition of technology into final applications. SMARTMolding has 12 production sites where automated VARTM processing is used for marine, ground vehicle, and other structures. Induction processing of laminates has been implemented by the largest U.S. user of carbon prepreg. Many of CCM's TechBriefs cite specific examples of technology transfer and industrial applications.

EDUCATION

Students and faculty in the Center are affiliated with all five engineering departments at the University as well as physics, chemistry & biochemistry, and business and economics.



CCM students at all levels are active participants on interdisciplinary research teams; in addition to a solid grounding in the fundamentals, composites students at UD gain practical insight into the solution of real-world engineering problems. They also have the opportunity to interact with visiting students, faculty, and researchers from industry, government agencies, and other universities in the U.S. and abroad.

CCM has a unique undergraduate research program in collaboration with the University Honors

Program that promotes cross-disciplinary education. Some 50 students are involved each year as CCM undergraduate research assistants; more than 1,000 students have participated in the program since its inception in 1980.

Related continuing education opportunities include Engineering Outreach and CCM workshops, symposia, and seminar series.

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