



Colorado School of Mines
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Web site: <http://www.mines.edu/Research/>

Center for Advanced Ceramics (CCAC)

The Center for Advanced Ceramics (CCAC) is developing the fundamental knowledge that is leading to important technological developments in advanced ceramics and composite materials. Established at CSM in April 1988 as a joint effort between CSM and the Coors Ceramics Company (now CoorsTek), the Center is dedicated to excellence in research and graduate education in high technology ceramic and composite materials. The goal of the Center is to translate advances in materials science into new and improved ceramic fabrication processes and ceramic and composite materials. Current research projects cover a broad spectrum of materials and phenomena including porous ceramics and metals for filters; nano-scale powder preparation and mechanics; ceramic-metal composites; fuel cell, solar cell and battery materials; high temperature gas corrosion; glass fiber forming; and mechanical properties of thin films. Current projects are supported by both industry and government, and several students are performing their research through a collaboration with the National Renewable Energy Laboratory located in Golden. Each project involves research leading to a graduate thesis of a student.

Background:

- University-sponsored
- Founded in 1988
- Currently has 4 full-time ceramics faculty, 22 graduate students, \$1.1 Million per year in research support

Areas of Expertise:

- Ceramic materials science
- Ceramic synthesis and processing
- Ceramic-metal composites
- Ceramic films, fibers and composites
- Oxidation and corrosion
- Dielectrics, ferroelectrics, and magnetics
- Glass/glass crystallization
- Materials for fuel cells and batteries
- Porous materials and substrates
- Electronic and optical ceramics
- Gas-solid interactions
- Ceramic-metal joining
- Combustion synthesis
- Powder and whisker synthesis

Sponsoring Organizations

- ACX Technologies (Coors Ceramics)
- Advanced Refractory Technologies
- *Government agencies* – National Science Foundation; U.S. Office of Naval Research; U. S. Department of Energy; National Aeronautical Space Administration
- Colorado Advanced Technology Institute (CATI transferred to the Colorado Commission on Higher Education (CCHHE) in 1999)

Method of Technology Transfer:

- Ceramic user-manufacturer-supplier research
- Seminars, presentations, reports, papers
- Hands-on, real-world research for students
- M.S. and Ph.D. degrees for students

Spin-offs / Contributions:

- New materials
- New processes
- Patents

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