



Colorado School of Mines
1500 Illinois Street
Golden, CO 80401 U.S.A.
Web site: <http://www.mines.edu/Research/>

Colorado Institute for Fuels and High Altitude Engine Research (CIFER)

The Colorado Institute for Fuels and High Altitude Engine Research (CIFER) is an interdisciplinary research institute involving faculty and students from several academic departments at the Colorado School of Mines. CIFER was formed to assist industry, state and federal governments in developing and implementing clean air policy for the benefit of the U.S. and particularly for high altitude communities through the development of newer, cleaner burning fuels and the technology to properly use fuels.

The overall objective of CIFER is to enhance air quality through research, development and education in relation to heavy-duty mobile sources through its specific strengths in fuels science, catalysis, materials, combustion science and analytical chemistry. CIFER has performed testing for engine manufacturers, (diesel, gasoline, natural gas, propane, methanol, and other alternative fuels), petroleum refiners, catalyst vendors, EPA, DOE, and GRI.

Background:

- Designated as the National High Altitude Heavy Duty Research and Technology Assessment Center under the Clean Air Act Amendments of 1990.
- Received EPA cost-share funding to construct the nation's first EPA certification, high altitude heavy-duty engine and vehicle testing laboratory.
- In 1994 received CARB approval for certification testing of alternative diesel fuel formulations and aftermarket devices.

Areas of Expertise:

- Heavy-duty engine and vehicle test method development
- Environmental and energy policy
- Catalysts for air pollution control
- Fuels and petrochemicals processing (catalysts, reaction engineering)
- In-use emissions measurements from heavy-duty vehicles
- Alternative and renewable fuels

Sponsoring Organizations:

- State of Colorado (Energy Conservation, Public Health and Environment)
- Regional Transportation District
- *Government agencies* – DOE; EPA; U.S.D.A.; D.O.T.
- Gas Research Institute; Ford Motor Company; Cummins Engine Company; Paramount Petroleum; Navistar International PSCo of Colorado / Natural Fuels Corp.

Method of Technology Transfer:

- Works directly with federal agencies to build an emissions data base for heavy-duty vehicles, particularly at high altitude
- Works with companies in fuels, engine, and catalyst research
- Provides workshops, symposiums, classes, and special services to industry, government, and local community groups
- M.S. and Ph.D. degrees and experience for undergraduates
- **Web site:** <http://www.mines.edu/research/ord/cifer/>.

Spin-offs / Contributions:

- Contribute to local policy debate on air quality and pollution control
- Analysis of contribution of diesel vehicles to urban air pollution of biodiesel
- Diesel emissions measurement at high altitude
- Definitive studies of economics and environmental aspects

Contact CIFER Director, Dr. Robert L. McCormick; (303) 273-3967; rlmccorm@mines.edu