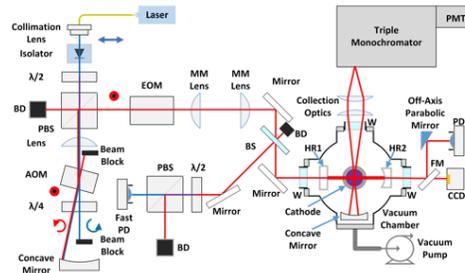


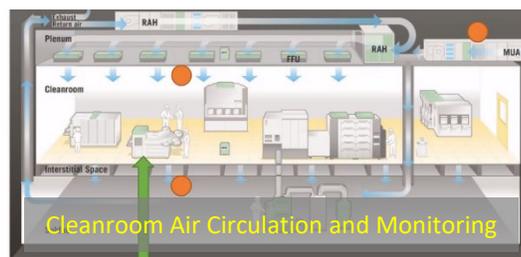
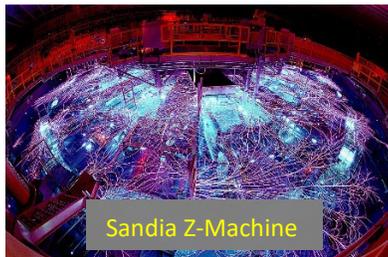
Graduate Student and Post-Doctoral Openings at Colorado State University (CSU)
Faculty Adviser: Azer Yalin, Professor, Dept. Mechanical Engineering

Research Area 1: Laser Diagnostic of Plasmas and Electric Propulsion (EP)



Laser diagnostics provide state-of-the-art methods to non-intrusively probe gases and plasmas. A main objective of our research group is to develop and implement laser diagnostic methods to advance the understanding and capabilities of electric propulsion plasma thrusters (e.g., ion and Hall thrusters) used for satellites and space exploration. As part of the NASA center, Joint Advanced Propulsion Institute ([JANUS](#)), we are tasked with developing laser diagnostics including Cavity-Ring Down Spectroscopy (CRDS) to study thruster sputtering and erosion, and Two Photon Absorption Laser Induced Fluorescence (TALIF) to study densities of neutral atoms to examine facility effects.

Research Area 2: Laser Spectroscopy Systems for Technological Applications



We also have openings for projects related to technological uses of applied spectroscopy systems. These projects include: 1) developing laser diagnostic techniques, including Thomson scattering, to measure laser plasmas within high-power switches for Sandia National Laboratory ([SNL](#)), and 2) developing cleanroom monitoring technology, for gas-phase species and particles, based on cavity ring-down spectroscopy (CRDS) techniques, in support of industrial semiconductor fabrication.

We have **openings for both graduate students (MSc/PhD) and post-doctoral researchers** to contribute to these projects. Researchers will gain experience with advanced laser diagnostics suitable for plasma, combustion and/or atmospheric sampling, while working in a diverse multi-disciplinary environment with collaborators from both within and outside CSU.

Further information about our research group – the Center for Laser Sensing and Diagnostics - can be found on our group's [webpage](#). We are located at the [Powerhouse Energy Campus](#) and EP projects are performed collaboratively with CSU's [Electric Propulsion and Plasma Engineering Group](#). These links contain information about the [Department of Mechanical Engineering](#) and [CSU](#). Information about Fort Collins (ranked as one of top US cities to live in) can be found [here](#) and [here](#). *Start date: ASAP / Fall 2022.*

Questions? – Please contact: Prof. Azer Yalin, azer.yalin@colostate.edu, 970-232-5545



MECHANICAL ENGINEERING GRADUATE PROGRAM

COLORADO STATE UNIVERSITY

ABOUT CSU

CSU is one of the nation's top public research universities with more than 33,000 students and \$400 million in annual research funding. The Walter Scott, Jr. College of Engineering at CSU prepares students to engage in and solve global challenges to shape a better world through research, education, innovation and outreach. The college attracts about \$80 million in annual research dollars and is a campus leader in patents, startups, and technology transfer.

ABOUT THE DEPARTMENT

The Department of Mechanical Engineering at CSU offers a curriculum that integrates exceptional classroom learning and in-depth engineering practice for an unparalleled educational experience. State-of-the-art labs provide unmatched, hands-on experience, and \$11 million in annual research funding provides groundbreaking opportunities focusing on energy, health, and materials. Online programs also offer continuing education opportunities for working professionals.

GRADUATE DEGREE PROGRAMS

PH.D. DOCTOR OF PHILOSOPHY

Mechanical Engineering
Minimum of 72 credits; dissertation required
Available on campus

M.S. MASTER OF SCIENCE

Mechanical Engineering
Minimum of 30 credits; thesis required
Available on campus

M.E. MASTER OF ENGINEERING

Specializations: Mechanical Engineering, Aerospace Engineering, or Advanced Manufacturing
Minimum of 30 credits; no thesis
Available on campus or online

GRADUATE CERTIFICATES

Specializations: Aerospace Engineering or Advanced Manufacturing
9 credits
Available on campus or online

ENERGY

Energy is the central element of almost every major challenge and opportunity the world faces today. CSU has a long history of pioneering work in energy, and the Department of Mechanical Engineering plays a central role in active research programs. Work includes addressing critical global environmental problems, breakthroughs in the aerospace sector, renewable energy, development and application of advanced computational fluids algorithms, and systems engineering.

HEALTH

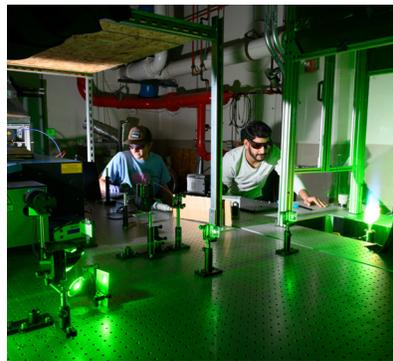
Our faculty apply mechanical engineering principles to better understand disease processes and develop novel treatments for human medicine. Our faculty hold joint appointments in the School of Biomedical Engineering and closely collaborate with clinical colleagues in CSU's highly ranked Veterinary Medicine program. Current research interests include experimental and computational modeling in orthopaedic, cardiovascular and liver systems.

MATERIALS & MANUFACTURING

Innovations in technology are rapidly changing the way products are conceived, designed, fabricated, distributed, and supported. Our faculty investigate the fundamental principles of matter in order to engineer new materials for real world applications. Primary areas of research include: materials processing and manufacture, materials synthesis, biomaterials, photovoltaics, thin films, sintering, composites, electrospinning, plasmas, interfacial and surface engineering.

RESEARCH AREAS:

Bioengineering | Aerospace Engineering | Advanced Manufacturing | Air Quality | Environmental Engineering | Heat and Mass Transfer | Industrial and Systems Engineering | Mechanics and Design | Robotics | Computational Fluids | Plasma Engineering | Advanced Materials Processing | Orthopaedic and Cardiovascular Biomechanics | Biomaterials and Nanobiotechnology | Alternative Energy Solutions | Hybrid Vehicles | Laser Diagnostics



FUNDING

Our M.S. and Ph.D. students are funded by graduate teaching assistantships (GTAs), graduate research assistantships (GRAs), fellowships, scholarships, or from other sources of extramural support. The financial support provided typically includes full coverage of tuition and a monthly stipend. Our M.E. students often seek funding through employers, fellowships, or scholarships.

CONTACT

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Visit our website to learn more!
www.engr.colostate.edu/me