COMBUSTION & ENERGY RESEARCH LABORATORY

AUBURN UNIVERSITY

Open Graduate Positions in Plasma-Assisted Combustion, Auburn University, United States

The Combustion and Energy Research Laboratory at Auburn University has several immediate vacancies for fully-funded PhD and MS assistantships with a focus on experimental and numerical initiatives in the area of non-equilibrium plasma-assisted combustion (PAC). The research group led by Dr. Nicholas Tsolas has projects currently sponsored by NSF, DOE, and NASA to support the development of next generation advanced propulsion systems.

The primary role of the applicant(s) will require to support research activities of the lab with opportunities to contribute to ongoing internal and external collaborative projects. Responsibilities will include planning and leading PAC experiments including experimental facility design, diagnostic development, data acquisition, and data analysis; numerically simulate plasma-chemical kinetic processes; mentoring and supporting undergraduate students; preparation of peer-reviewed journal articles, conference publications and technical reports; presentation of work at professional conferences; and participation in the development of new research ideas and research proposals. Candidates will also be highly encouraged to use this opportunity to gain new experimental skills related to plenoptic imaging, design for high-voltage plasmas, additive manufacturing, and spectroscopy.

The new hire(s) will receive a competitive annual GRA stipend, medical and dental insurance, with full tuition waiver. Select candidates with exceptional credentials will also be considered for Auburn University Fellowships valued up to an additional $10,000 per year

Essential Requirements:

The ideal PhD candidates should have:

- Hold a master's degree or equivalent in mechanical engineering, aerospace engineering, chemical engineering or related disciplines. Highly qualified recent undergraduates will also be considered for direct-PhD admission.
- Demonstrated experience with the design, fabrication and assembly of experimental facilities. Some experience with commercial software SOLIDWORKS, CATIA, and/or AutoCAD.
- Demonstrated proficiency in the construction/operation of experiments, diagnostic equipment and related infrastructure is advantage. Basic machining skills are also ideal.
- Experience with the use of chemical kinetics software, such as CHEMKIN, CANTERA and/or OpenFOAM, some experience with CFD software is ideal.
- Strong programming skills in FORTRAN, MATLAB, C/C++ or other script languages.
- Applicants must be proficient in both written and oral English, possess excellent communication skills, with strong technical writing abilities.
- Ability to work independently, self-motivated, with a strong work ethic and demonstrate good collaborative skills.

The ideal MS candidates should have:

- Have a minimum 3.4 GPA from undergraduate degree, in mechanical engineering, aerospace engineering, chemical engineering or related disciplines.
- Strong foundational knowledge of core undergraduate courses in thermodynamics, fluid mechanics, heat transfer, and/or introductory combustion.
- Strong programming skills in FORTRAN, MATLAB, C/C++ or other script languages.
- Demonstrated experience with hands-on design projects, and/or extra-curricular activities (e.g. Formula SAE)
- Applicants must be proficient in both written and oral English, and possess excellent communication and interpersonal skills.
- Ability to work independently, self-motivated, with a strong work ethic and demonstrate good collaborative skills.

About Auburn University:

Auburn University is a public R1 research institution and is considered one of the fastest growing educational and research institutions in the country. The Samuel Ginn College of Engineering is considered the top-ranked engineering graduate school in the state of Alabama and is one of the nation's top 50 institutions in research expenditures. Cutting edge research is underway across 10 departments and 21 nationally recognized research centers and institutes, focused on producing technology and innovation that will help drive economic growth while improving human life on a global scale.

How to Apply:

The initial appointment has a flexible start date, but no later than August 15, 2023. Interested applicants should send, via e-mail: a cover letter describing their background, interest in the position and career goals; updated C.V.; electronic copies of at any representative publications for PhD applicants; and a list of 3 references to:

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