



Tenure-Track Faculty, Assistant Professor
Decarbonized Energy Chair

CentraleSupélec, Université de Paris-Saclay
Department of Mechanics, Energetics and Processes
EM2C Laboratory, CNRS- UPR 288

The EM2C-CNRS laboratory and the Department of Mechanics, Energetics, and Processes at CentraleSupélec, Paris-Saclay University invite applications for a tenure-track position. The future *junior professor* chairholder will be employed at the assistant professor level for five years before applying to a permanent associate professor position.

Context

Hydrocarbon combustion, involved in more than 80% of the worldwide primary energy consumption, produces most anthropogenic CO₂ emissions. Because batteries exhibit a lower energy density than fuels, electrification will not replace combustion in the short term in aircraft engines but also in many industrial sectors, such as steel, cement, glass, and aluminium. Answering the climate change challenge, therefore, involves the decarbonization of combustion systems. Solutions are to burn CO₂-free or CO₂-neutral e-fuels synthesized from sustainable energy sources such as hydrogen, ammonia, or biogases. The stabilization and the control of pollutants emitted from these new decarbonized flames raise challenging scientific issues.

Research

Applicants whose research explicitly addresses the scientific challenges of decarbonized combustion through theoretical, numerical and/or experimental studies are particularly welcome. Subfields of interest include but are not limited to *turbulent reactive flows, pollutant formation, flame stabilization, flame dynamics, diagnostics for reactive flows, spray flames, numerical methods for reactive media*. The successful candidate will have a strong record of scholarly research in energy with a combustion background, contributing to decarbonized flame's specific challenges.

The Chairholder will be fully integrated into the "Combustion" research team of the EM2C Laboratory, internationally recognized for its experimental activities on the dynamics and stabilization of turbulent flames and on the formation of pollutants in extremely varied configurations, from the most fundamental to the most applied. The assistant professor will benefit from the experimental and computational facilities of the EM2C laboratory. Initial financial support is scheduled to fund the salaries and overhead of two PhD students. A budget will also be allocated to cover material expenses.

Teaching duties

During the tenure track period, the *junior professor* chairholder will have a teaching load limited to 64 hours (whereas the standard assistant professor position is 192 hours). This reduced load is intended to facilitate and accelerate the development of the research activity. The Chairholder will teach in the Mechanics, Energetics, and Processes Department (MEP) at

CentraleSupélec. He or she will be involved in the department teaching classes such as Heat and Mass transfer, Experimental Activities, Thermodynamics, etc.

Requirements

Candidates should have earned a PhD in Mechanical Engineering, Energetics, Aerospace Engineering, or a closely related field by the time of employment. The incumbent will have already demonstrated clear potential to become an outstanding academic, educator, and independent researcher.

Keywords: decarbonization of energy, hydrogen, pollutants, reacting flows, energy transition

Application

This job profile is non-official as the position opening is still under administrative processing. Further details on the application procedure will be communicated soon. We, however, encourage future applicants to send their CV and list of publications to the chair's scientific contacts:

- Pr. Benoît Fiorina (benoit.fiorina@centralesupelec.fr)
- Dr. Laurent Zimmer (laurent.zimmer@centralesupelec.fr)