



Postdoctoral Associate in Thermoacoustics



A position exists for a postdoctoral associate to work on experimental measurements and laser diagnostics of aeroengine injectors, targeting thermoacoustic characteristics. The project is funded by EPSRC and EU grants and will involve significant collaboration with Rolls-Royce. The aim of the project is to understand the origins of thermoacoustic behaviour of different aeroengine injectors and what factors control the response of the flame to thermoacoustic perturbations.

Acoustically-coupled combustion oscillations are a concern in industrial gas turbines, where they have led to long commissioning times, unplanned maintenance and gaps in operation. Such oscillations are also expected in current and next generation fuel-lean aeroengine combustors. Passive control strategies are needed to minimize the amplitude of the pulsations in order to achieve cleaner power production.

The project will be developed in the Intermediate Pressure Combustion Facility at Cambridge, investigating full size injectors at realistic operating conditions up to 10 bar and 873 K. The successful candidate will have a background in combustion and laser diagnostics and/or thermoacoustics. Preference will be given to candidates with experience in high pressure devices and laser diagnostics (PLIF/PIV and related imaging techniques), great attention to detail and ability to work under tight deadlines.

The candidate will perform most of her/his research activities in the Cambridge Combustion Research Centre (http://www-diva.eng.cam.ac.uk/energy/combustion_intro.html), a large group in the overall area of combustion, with state of the art experimental facilities.

The starting salary details are dependent on experience, but will range from £23,449 to 26,391. Further details may be obtained from Prof. Simone Hochgreb, Department of Engineering, Trumpington Street, Cambridge, CB2 1PZ, (Tel +44 1223 764098, email: simone.hochgreb@eng.cam.ac.uk), to whom a letter of application, CV, sample publications and list of references should be sent as soon as possible.

Further Particulars – TECC and SAMULET

The research program involves five institutions (Rolls-Royce plc (Derby), Rolls-Royce Deutschland (Dahlewitz), CAMCON, TU Darmstadt and Cambridge), and four post-doctoral fellows. Two of the fellows are seconded from the two universities (TUD and UCAM) to the industrial collaborators in Derby and Dahlewitz. The two other recruited fellows will add to the effort by performing experimental work on especially designed burners to investigate the effect of flame stratification on combustion instabilities and flame structure.

The work to be performed at Cambridge will involve the development of experimental work to underpin computations on the effects of fuel-air stratification on the behavior of turbulent flames. The experiments will address systematically how the rate of mixing fuel and air in a model lean direct injection combustor affects the flame transfer function and thus the thermoacoustic characteristics of the system. Measurements of pressure, heat release rate, velocities and key species, via imaging and other methods will be performed to allow understanding of the physics, and to provide high quality data for model validation.

The candidate is expected to have experience in relevant experimental techniques in combustion, particularly with regards to laser imaging. Essential to the position are the ability to manage a project independently, to collaborate effectively with other members of the technical and professional staff, and to work using planned, safe and prudent practices. Excellent professional communication skills, both in writing and technical presentations, are highly desirable.

All fellows within the Marie-Curie partnership will have to submit periodic reports on their progress to the project coordinator (Prof. S. Hochgreb), and maintain auditable technical and financial records. Collaboration with fellows within the network as well as other institutions is highly desirable.

Candidates are encouraged to enclose publications and a list of referees along with their CVs. Shortlisted candidates will be invited to an interview for the final selection.