Post-Doc position at CNRS – CORIA
INSA Rouen Normandie

Optimized and reduced chemistry for turbulent combustion modeling of perfluorocarbons

The proposed research program offers opportunities for conducting fundamental works in advanced numerical modeling of reactive flow physics and computations. The transformation of residual gases containing perfluorocarbons (PFCs) will be studied. The ultimate objective is to develop and validate a reduced chemical scheme ready for the simulation of combustion systems transforming perfluorocarbons gases into components having a neutral impact on environment.

The work is organized within a close collaboration between CNRS-CORIA and SOLVAY, a world leader in the field of chemical components.

SOLVAY and CNRS-CORIA have a solid track record of collaborations in the development of advanced methods for the analysis and the optimization of furnaces designed to transform exhaust gases (Locci et al., 2018). This includes the development of numerical models at various complexity levels. From refined descriptions of chemical kinetics (Farcy et al. 2014) up to the simulation of the unsteady flow dynamics in full scale systems (Farcy et al. 2016a), along with the development of mobile computing tools, useful for real-time control of industrial units (Farcy et al. 2016b). Recently, CORIA formulated an automated method to reduce detailed chemical schemes and optimize their rates (reaction constant parameters) under given operating conditions (Jaouen et al. 2017a, 2017b).

It is proposed to build up on this knowledge to progress in the understanding and the design of systems processing PFCs.

The Post-Doc candidate should have a background in reacting flow physics.

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- C. Locci, L. Vervisch, B. Farcy, P. Domingo, N. Perret (2018) Selective *Non-Catalytic Reduction (SNCR) of nitrogen oxide emissions: A perspective from numerical modeling*, Flow Turbulence and Combust. 100(2): 301-340.