Post-Doc Research Grant

Experiments and Modeling of Duct Flows of Complex Fluids

Call open for applications for a post-doc research grant on "**Experimental analysis and analytical formulation of flows in duct for the oil industry**", funded by the Brazilian Research Council (CNPq-Conselho Nacional de Desenvolvimento Científico e Tecnológico) and Petrobras.

Duration and Environment: The appointment will be for 12 months with a possible reappointment for two additional years. Starting date immediately. The work will be carried out at the new facilities of Laboratório de Mecânica da Turbulência of COPPE at Universidade Federal do Rio de Janeiro (UFRJ), Brazil. The project leader is Professor Átila P. Silva Freire. The new laboratory is located right at Rio's Technological Park in Ilha do Fundão, next to the research laboratories of other oil-industrial companies, such as Baker and Hughes, Petrobrás and Schlumberger, with whom the laboratory maintains close contact.

Academic Requirements: Prospective applicants should possess a PhD degree in Chemical Engineering, Mechanical Engineering, Physics or related areas, obtained in the last 5 years with a solid background in fluid mechanics and preferentially in gas-liquid flows. Experience in complex fluids and modelling is an advantage.

Activity Outline: The researcher will be part of a large team working on smooth and rough pipe flows of single-phase and gas-liquid fluids without and with wall transpiration. The team will be developing experimental as well as theoretical/ modelling work and the post-doc will be committed to the latter, but in close collaboration with the former and with the project leader (Prof. Átila P. Silva Freire) and a visiting Researcher (Dr. Fernando Pinho from CEFT, University of Porto, Portugal).
The project involves the Brazilian oil company (Petrobras) and the research focus is on real problems associated with deep off-shore drilling. Initially, real fluids will be experimentally investigated and this will be followed by tests with model laboratory fluids mimicking the rheology of real fluids. Hence, depending on the formulation, the liquid phase will exhibit both Newtonian and non-Newtonian rheology.
The models to be developed rely on local approximations and although based on existing models from the literature will have to be extended to incorporate the effects investigated in this project. The ultimate objective will be to arrive at general laws of flow resistance to be implemented in codes for the prediction of industrial flows of relevance to the oil industry.

Stipend: At the time of publication, the grant stipend starts at R$ 3200/ month but can go up to R$ 7400/ month depending on the candidate's experience and curriculum.

Documents Required: Applications should clearly state the reference CNPJ/MF-NIDF1_Fev2013 and must include: i) Application letter; ii) Curriculum Vitae; iii) Copy of identity card or passport; iv) Academic degree certificate(s) including the PhD certificate; v) List of Publications; vi) Contact information of three professional references (full postal and electronic addresses).

Timeframe of the call: The call is open until the place is filled

Applications can be sent by email to either:

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