

1

OVERVIEW

- **Institution:** Instituto de Investigaciones en Materiales (Materials Research Institute, IIM), Unidad Morelia (Morelia Unit), Universidad Nacional Autónoma de México (National Autonomous University of Mexico, UNAM).
- **Project financed by** CONACYT-SENER FSE “Centro Mexicano de Innovación en Bioenergía-Clúster de Biocombustibles Sólidos”.
- **Project Title:** Improvement of biomass cookstoves through combustion models and CFD simulation.
- **Research Fields:** Computational fluid dynamics, combustion simulation, energy efficiency.
- **Work Place:** Morelia, Michoacán, México.
- **Research Laboratory:** Materials Research Institute, Morelia Unit. Laboratory for design modelling and simulation.
- **Address:** Instituto de Investigaciones en Materiales, Unidad Morelia, UNAM. Antigua Carretera a Pátzcuaro No. 8701, Col. Ex Hacienda de San José de la Huerta C.P. 58190, Morelia, Michoacán, México.
- **Head of the Scientific Project:** Dr. Alberto Beltrán.
- **Offer:** 10 months Postdoctoral fellowship. Full time dedication: 40 hours per week.

2

PROGRAM DESCRIPTION

A position during 10 months as a postdoctoral scholar is available for working on combustion and transport phenomena in biomass cookstove geometries at the Materials Research Institute (Morelia Unit) of the National Autonomous University of Mexico (UNAM in Spanish). In particular, it is expected that the candidate will perform design, modelling and simulation studies focused on combustion, heat transfer and fluid dynamics studies using opensource software. This is a highly competitive appointment which provides rigorous training for the next generation of leaders in combustion science and technology.

3

EXPERIENCE

- Strong heat transfer, fluid dynamics and combustion knowledge.
- Strong understanding of finite element analysis and finite volume method.
- Cluster management and software development.
- Experience in design software (SOLIDWORKS), knowledge of engineering drawing.

4

ACTIVITIES

- Participating in the design, prototyping and validation of new concepts and models for biomass cookstoves through the use of simulation.
- Building and conducting CFD and combustion analysis to predict the performance and thermal efficiency of cookstoves.
- Writing at least one scientific paper about modeling of biomass combustion and cookstove efficiency.

5

HOW TO APPLY

Please send the following documents by email to **Dr. Alberto Beltrán** (albem@materiales.unam.mx)

- A short Curriculum Vitae and a covering letter showing your interest and especially addressing your professional project.
- A list of your major works (2 pages max.): scientific publications, patents and others scientific productions.
- A copy of your PhD diploma.

The head(s) of the scientific projects are responsible for the organization of the interviews and the selection of the candidates within their research unit, in compliance with the recruitment rules and practices in force in their supervisory institution(s).

Application Deadline: February 1st, 2019.

6

SOME PUBLICATIONS RELATED TO THE TOPIC

- Alex Wohlgemuth et al. Computational heat transfer analysis and design of third-world cookstoves. *Proceedings of the ASME 2009 Heat Transfer Summer Conference*.
- Smail Kalla, Hugo Marcoux, Alain deChamplain. CFD approach for modeling high and low combustion in a natural draft residential wood log stove. *International journal of heat and technology* Vol.33, no.1, 2015
- Antonio Galgano, Colomba Di Blasi, Andrej Horvat, and Yehuda. Experimental Validation of a Coupled Solid- and Gas-Phase Model for Combustion and Gasification of Wood Logs. *Energy & Fuels* 2006, 20, 2223-2232
- Hassan Ali and Terence Tang Jia Wei .CFD Study of an Improved Biomass Cookstove with Reduced Emission and Improved Heat Transfer Characteristics. *Journal of Clean Energy Technologies*, Vol. 5, No. 6, November 2017
- Nordica A. MacCarty, Kenneth M. Bryden. A unified set of experimental data for cylindrical, natural draft, shielded, single pot, wood-fired cookstoves. *Energy for Sustainable Development* 26 (2015) 62–71

7

FURTHER INFORMATION

For further information, please contact:

Dr. Alberto Beltrán

Materials Research Institute,

National University of Mexico, Morelia Campus

e-mail: albem@materiales.unam.mx

Phone: (+52) 55 56 23 7888

Antigua Carretera a Pátzcuaro No. 8701, Col. Ex Hacienda de San José de la Huerta

C.P. 58190, Morelia, Michoacán, México

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