

Lead institution: IPEN Work Address of the position: IPEN - CNEN / SP Travessa R, 400 05508-170, São Paulo, SP, Brazil	
Supervisor name: Fabio Coral Fonseca	Department: IPEN
APPLY AT: www.rcgi.poli.usp.br/opportunities or https://goo.gl/p4ifHx Position <u>17PDR003</u>	Type: SI / MSc / PhD / Post-doctoral Period: start July 2017 Number of months: 30 Application deadline: July, 10
Project title: (Portuguese and English): Advancing Fuel Cells For Operation on Natural Gas Desenvolvimento de Células a Combustível para Operação a Gás Natural	
Research theme area: (Portuguese and English) Fuel Cells Células a Combustível	
Abstract (Portuguese and English) The project aims at critical issues concerning some of the main technological and scientific challenges towards the use of natural gas in fuel cells. Este projeto pretende abordar questões críticas para alguns dos principais desafios científicos e tecnológicos para o avanço da utilização do gás natural (GN) em células a combustível.	
Description The research topics are focused on two technologies: proton exchange membrane fuel cell (PEMFC) and solid oxide fuel cell (SOFC). The main topics to be studied are: i) anodes for efficient electro-oxidation of methane and/or more tolerant to gas fuel mixtures containing H ₂ /CO; ii) membranes for high-temperature PEMFC; e iii) carbon resistant anode materials and catalytic layers for direct natural gas SOFC's. The main objective is to advance the knowledge to expand the use of natural gas on fuel cells. A pesquisa será focada em duas tecnologias: célula a combustível de membrana trocadora de prótons (PEMFC) e células a combustível de óxido sólido (SOFC). Neste cenário, o projeto visa o estudo de: i) anodos mais eficientes para a eletro-oxidação do metano e/ou mais tolerante a misturas H ₂ /CO de combustível; ii) membranas para PEMFC de alta temperatura de operação; e iii) materiais de anodo e camadas catalíticas resistentes a depósitos de carbono para a utilização direta do NG em SOFC's. O objetivo principal é avançar o conhecimento para ampliar o uso de NG em células a combustível.	

Requirements to fill the position. (Ex: specific experience, minimum or maximum years after concluding the course)

The post-doc fellow will take part in the research of direct methane solid oxide fuel cells. We seek a candidate with laboratory experience in the preparation, processing and characterization of ceramic materials for fuel cells. Expertise in both single cell fabrication and electrochemical characterization is essential. The candidate is expected to have experience in different techniques such as screen printing, X-ray diffraction, electron microscopy, and impedance spectroscopy. Previous activities with both advanced deposition techniques, such as pulsed laser deposition (PLD), and gas analysis (catalysis) in SOFC testing are highly desirable.

INFORMATION ABOUT FELLOWSHIP

The selected candidate will receive a FAPESP Post-Doctoral fellowship in the amount of R\$ 6.819,30 monthly payed in Reais and a research contingency fund, equivalent to 15% of the annual value of the fellowship which should be spent on items directly related to the research activity, as well as displacement funding, if necessary and applicable. More information about the fellowship is at: fapesp.br/en/postdoc.