



Subject offered for a contract starting october 2016

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**SUBJECT TITLE: Deep magma storage, evolution and degassing of Oceanic Island Basalts (OIB)**

Advisor: **DI MURO, Andrea (Physicien Adjoint), [dimuro@ipgp.fr](mailto:dimuro@ipgp.fr)**

Second Advisor/ Supervisor:

**ZANON, Vittorio, (MCF-Portugal), [zanon@ipgp.fr](mailto:zanon@ipgp.fr)**

Host lab/ Team : *IPGP - Systèmes Volcaniques*

**IPGP– UMR7154**

Financing: Doctoral contract with or without teaching assignment

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**Topic:**

The origin and ascent of magmas at oceanic islands is strongly linked to local geodynamic setting (e.g. lithosphere thickness). The petrology and geochemistry of primitive magmas is a key-element to track the deep processes governing the conditions promoting the typical tholeiitic to alkaline transition at many intraplate sites.

Most of the studies on OIB in the central-north Atlantic area (Azores, Madeira and Canary islands) have been confined to a geochemical characterization of the magma source (e.g. Elliot et al 2007; Day et al 2010; Gurenko et al 2009; Sigmarsson et al 1998), and only limited research focused on the definition of the physical conditions for magma origin and ponding (e.g., Beier et al 2006; Métrich et al 2014; Andújar et al 2010; Galipp et al 2006; Schwarz et al 2004; Zanon and Frezzotti 2013).

This research aims at drawing a robust frame for magma origin, ascent and evolution for different oceanic islands in the central-north Atlantic Ocean and Indian Ocean, in order to quantify the influence of different geodynamic contexts on the melting, ascent and ponding conditions.

The study will build on the methodological approach defined in Métrich et al (2014) for the volcanic systems at Pico Island – The Azores and Di Muro et al. (2014) for Piton de la Fournaise. This multi-methodological approach includes bulk rock geochemistry, melt inclusions geochemistry (major and trace elements, volatile contents, in situ isotopes), mineral chemistry, fluid inclusions microthermometry and geochemistry. The results from the emerging model will be compared with data from literature on other oceanic islands in the World.

**Context:**

This research will be carried out at the Institut de Physique du Globe de Paris where state-of-the-art analytical facilities and scientific expertise in all fields of Earth Sciences coexist.

Most of analytical expenses and costs related to travels will be supported by the Portuguese project MARES, managed by Vittorio Zanon and aiming at the study of magma formation at

Atlantic islands. Further funding for research on Piton de la Fournaise will be provided by the ANR project “Slidevolc”, currently in the final evaluation phase. Therefore, the PhD applicant will integrate an international team of volcanologists and fluid and solid geochemists with consolidate experience in the study of oceanic volcanic systems. The student is expected to spend about one-two months/year in the field (Azores, Canary Island, La Réunion) for sampling and mapping.

### **Salary and term:**

The position is full-time (100 %) for 36 month duration. Salary is in accordance with the French public service rate (1 350€ net/month).

### **Required qualifications and skill:**

- Background in petrology and geochemistry of fluid and melt inclusions,
- Good attitude to both field and laboratory work and good organizational skills,
- Knowledge of English language

### **Application:**

To apply for this position, please send your curriculum vitae and motivation letter to Andrea Di Muro ([dimuro@ipgp.fr](mailto:dimuro@ipgp.fr)) and to Vittorio Zanon ([zanon@ipgp.fr](mailto:zanon@ipgp.fr)).

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