The annual (three-year) salary for a ClerVolc PhD in 1920 euros per month, before any tax. The ability to speak French is not necessary, but any successful non-francophone candidates will be required to attend courses in the language. Overseas applicants will be required to apply for a student visa, aided by the university.

Please note that only candidates who have either completed a Masters degree (or equivalent, to be specified), or who are in the processes of studying for one and will graduate this year, are eligible to apply for PhD grants in the French system.

Application procedure
Interested candidates are invited to:

1. Contact the main supervisor (see below for email addresses) in order to discuss the project.
2. Send the following package to the main supervisor (with copy to tim.druitt@uca.fr)
   - A curriculum vitae including name, nationality, contact details, education history with dates and annual exam results, employment history, and any other information.
   - Photocopies of official certificates for undergraduate and Masters years, with courses taken and grades.
   - A letter of motivation no longer than two pages.
3. Arrange for letters of support by two academic referees to be sent confidentially by email to the main project supervisor. These letters should be sent directly by each referee and should not transit via the candidate.

The application package and references may be in French or English. **They should reach us no later than 20 May 2021.** Incomplete or late applications will not be taken into account.
Candidates for the project will be shortlisted, and the shortlisted applicants will be invited to an online interview at the beginning of June for a decision immediately afterwards.

In the event of enquiries or problems, please contact ClerVolc scientific director T. Druitt (tim.druitt@uca.fr).

Equilibrium and Kinetic fractionation of sulphur isotopes in magma
Supervisors : Kenneth Koga, Estelle Rose-Koga (Laboratoire Magmas et Volcans)

Contact: Ken.Koga@uca.fr

Sulfur has four stable isotopes, 32S, 33S, 34S, and 36S, of which 32S is the most common with 95% abundance. In general, chemical reactions at high temperature do not discriminate one isotope from another; all S-bearing, equilibrium, phases have the same isotopic composition, in such case. Reactions at low temperature can usually discriminate the isotopes. However, fractionations of these four isotopes are observed among material derived from volcanic eruptions, usually attributed to fractionation during volcanic degassing. While exact mechanism of this fractionation is not well understood, there can be several possible explanations.

The proposed thesis project aims to quantify equilibrium and kinetic fractionation of sulfur isotopes in various geological settings especially related to volcanic eruptions, by laboratory high-temperature, high-pressure, experiments. Because of lack of laboratory determined kinetic parameters, the majority of current geochemical interpretations of sulfur isotope data preclude kinetic processes. The project is conceived to fill such obvious gap.

In addition to master-level education in Earth Sciences, following backgrounds would be particularly useful in carrying this research: familiarity with thermodynamic and kinetic theories, ease with programing computations using widely available scripting programs

such as MATLAB, Python, R, and other similar software, experience and/or enthusiasm working in experimental petrology lab (meaning heating and pressing rock powders), as well as tenacity to seek the highest possible data quality.