

MEMO²: MEthane goes MOBILE – MEasurements and MOdelling

MEMO², a European Training Network (MSCA-ETN) with more than 20 collaborators from 7 countries, will identify and evaluate methane emissions and support mitigation measures by I) developing new and advanced mobile methane measurements tools and networks, II) isotopic source identification, and III) modelling at different scales. The project aims to educate a new generation of “cross-thinking” scientists, which are able to effectively implement novel measurement and modelling tools in an interdisciplinary and intersectoral context. MEMO² will bridge the gap between large-scale scientific estimates from in situ monitoring programs and the ‘bottom-up’ estimates of emissions from local sources that are used in the national reporting.

ESR7: Methane from waste: constraints on captured and fugitive emissions from isotopic analysis

Supervisor: Dr. David Lowry, Dr. Rebecca Fisher, and Prof. Euan Nisbet (Royal Holloway University of London, United Kingdom), co-supervisor: Dr. Huilin Chen (University of Groningen, The Netherlands)

Employer: Royal Holloway University of London, United Kingdom

Project Description: Methane from waste comprises approximately 15% of anthropogenic emissions. These are dominantly of biogenic origin and can vary with temperature and process of production, which results in variation of emissions with time of day and time of year. In addition, the waste sites now commonly produce and combust this biogas, and emissions from each component can be separated using the isotopic technique. For landfill sites in particular a percentage of the methane produced is oxidised by soil cap or oxygen in upper-levels of less-compacted waste and this results in a different isotopic signature to non-oxidised methane in the gas extraction system. Variation in emissions by season and diurnal temperature will be assessed by mobile methane measurement of plumes at a selected number of sites in the UK with samples collected for isotopic analysis. Methane oxidation percentages will be calculated by utilising additional gas well samples. Isotopic differences from other UK methane sources will be assessed by mobile measurement and sampling at key sites. Emissions from composting and wastewater treatment will also be assessed. Furthermore the successful candidate will contribute to trans-European mobile measurement campaigns and summer schools organized by MEMO².

Secondments: The successful candidate will spend 1 month at the University of Groningen and the Energy research Centre of the Netherlands (ECN) for joined campaigns in Netherlands, further 4 months at the non-academic partner Viridor for waste campaigns, and 2 weeks at Utrecht University to learn technique and analyse ²H of selected samples from waste sources.

We are searching for: Applicants should have, or expect to obtain by summer 2017, a degree or masters qualification in an appropriate science, preferably with experience of atmospheric chemistry, some knowledge of stable isotopes / mass spectrometry. A valid EU driving license is preferable. The thesis will be written in English so a good working knowledge of the language is required. Candidates must be willing to travel abroad for secondments and measurement campaigns, and to present their research to an international research community. As this project requires close collaboration within the consortium, candidates are expected to be excellent team players. The participation in workshops and secondments during the project is mandatory. According to [EU eligibility criteria](#), researchers may be of any nationality, BUT must be at their early career stage and may not have resided or carried out their main

activity (work, studies, etc.) in the United Kingdom for more than 12 months in the 3 years immediately before the application deadline.

We offer: The successful candidate will join the Department of Earth Sciences at Royal Holloway University of London, which has successful groups working in greenhouse gases and atmospheric chemistry and a strong industry-focussed taught masters programme in Environmental Diagnosis and Management. Training will be provided in field-based practical scientific research (site selection, use of mobile measurement equipment, sample collection and logistics), laboratory analysis of methane and CO₂ concentrations and isotopes using optical and mass spectrometers, and quantitative analysis and interpretation of the data generated. This will include the use of GIS and programming in Matlab and R. Communication, organisation and networking skills will be refined through MEMO² training workshops and symposia and at UK and international conferences. Industry training in the waste industry will be provided during secondments. Individual research development programmes at RHUL offer a wide range of transferable skills to conduct and present research efficiently and effectively. They also provide broad knowledge of environmental geoscience, and help foster a multi-disciplinary approach to research that benefits career development. Employment will be full time for 3 years from September 2017, with submission of the completed thesis within a maximum of 4 years. There are no fixed working hours, but a minimum 35-hour working week is expected. Entitlements are for up to 27 days of personal holiday per year, plus 14 days when the university is closed for bank holidays and over the Christmas and Easter holiday periods. The successful candidate will be automatically entered into the UK Universities SmartPension scheme but can opt out in writing. MSCA-ETN projects are part of Horizon 2020 and offer attractive salaries and working conditions following the conditions as described in the [respective work programs](#).

Selection procedure:

The selection procedure will follow the [Code of Conduct for Recruitment](#). Candidates will be selected first on [EU eligibility criteria](#), second on qualifications. Shortlisted candidates will be expected to attend for interview at RHUL in spring 2017. The interview panel will consist of the RHUL supervisors and an independent member of the departmental research committee. Shortlisted candidates will be invited for interview at RHUL and requested to complete the online postgraduate study application form prior to interview, which can be found here <http://www.rhul.ac.uk/studyhere/postgraduate/applying>.

Deadline: Eligible applications received before **31 March 2017** will receive full consideration

Contact: Applications should be sent directly to management@h2020-memo2.eu or to the MEMO² coordinator [Prof. Thomas Röckmann](#) or [Dr. S. Walter](#). The application material should include a letter of motivation, a curriculum vitae, copies of university and high-school degrees (including grades) and either two letters of recommendation or contact information of two people that can be contacted for reference. For more information on the MEMO² project, including this and other vacancies, please visit the [MEMO² website](#).

Further information about the position can be obtained from David Lowry (email: d.lowry@rhul.ac.uk, tel: 0044-1784-443105).

Please contact the Postgraduate Programmes Co-ordinator if you have additional questions about the department (email: pgadmin@es.rhul.ac.uk ; tel: 0044-1784-443581).