

## Researcher Mobility Grant (RMG)

### APPLICATIONS ARE INVITED – Researcher in pVT, density and rheology of Non-Newtonian liquids

**RESEARCH:** An RMG-Researcher is required (1) to guarantee traceability to SI of oscillation-type densimeters measurements, performed in ENG59-RMG1, by means of pVT measurements of the same liquids studied in ENG59-RMG1(IPQ), (2) to perform a feasibility study of the transfer of a Laser Doppler Velocimetry (LDV) sensor, developed at PTB for gas flow measurements to the application on liquids by studying the flow curves of an aqueous particulate solution, developed in Activity 2 of ENG59-RMG1; and finally (3) to perform a literature study in order to provide an overview of the state-of-the-art of metrological arrangements for flow situations in channel flow between two flat planes. This work complements Work Package 2 of ENG59 NNL, concerns about the study of the physical behaviour of complex fluids by means of existing viscometer techniques and rheometers by comparing LDV measurements with the rheological behaviour of a particulate system in channel flow, measured with a cone-plate measuring system. Additionally, this work will complement Work Package 3 of ENG59 NNL, that aims to improve existing inline integrated sensors and will develop calibration methods for density of non-Newtonian liquids by working on the traceability chain. The RMG-Researcher may contribute to a peer reviewed scientific paper, and will have the opportunity to build links with the pVT, high pressure density measurements and rheology community. The purpose of this RMG-Researcher is also to use the results from ENG59-RMG1.

**EXPERIENCE REQUIREMENTS:** Experience in pVT, density and rheology measurements of Newtonian and Non-Newtonian liquids.

**PROJECT LOCATION:** The research will be undertaken at the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig, Germany, and must be located in a different country to the Researcher's employing organisation

**DURATION:** 5 months duration. Earliest start date is November 2016; with completion before the JRP end date which is 30 April 2017.

**ALLOWANCES:** The exact allowances can be found by using the "EMRP Researcher Grant Calculator" spreadsheet available at <http://www.emrponline.eu/downloads.html>

The EMRP Researcher Mobility Grant does not include a salary allowance. There is a fixed rate allowance of 1800 € /month living allowance (with an additional sum for those with a family who relocates with them), a further 500 € every 3 months as a travel allowance, and 200 € / month as a contribution to the Guestworking Organisation's overheads. In addition 1500 € may be claimed every 6 months for attendance at a specific named conference or meeting. Note that some of these allowances are corrected for each country.

**CONTACT:** Dr. Jan Jette Blangé, [jblange@vsl.nl](mailto:jblange@vsl.nl) , +31 6 1097 3289

Dr. Henning Wolf, [Henning.Wolf@ptb.de](mailto:Henning.Wolf@ptb.de), +49 531 592 3320

### RELATED JRP (each RMG is linked to a Joint Research Project of the EMRP)

**PROJECT TITLE:** ENG59 - Sensor development and calibration method for inline detection of viscosity and solids content of non-Newtonian fluids

#### PROJECT DESCRIPTION:

Non-Newtonian fluids, which include paint, blood, soup, and drilling fluids, contain a large amount of solids and have a viscosity that changes as they are sheared or stretched. For example, the viscosity of non-drip paint reduces as it becomes thinner when being applied to a wall. The underlying physics of non-Newtonian liquids affects the measurement of viscosity meters, but the resulting uncertainty and inaccuracy have never been systematically evaluated. The highest need for traceable, accurate, non-Newtonian viscosity measurements is in the energy sector. This project will map out fundamental measurement uncertainties of existing tools and carry out a review of the physics that impacts the viscosity of non-Newtonian liquids to produce a new metrology standard. Ultimately this will improve operational efficiency in the energy sector and enable the construction of more complex oil and gas wells to reach reservoirs in challenging locations.

For more information please visit:

[http://www.euramet.org/research-innovation/search-research/projects/details/?eurametCtcp\\_project\\_show%5Bproject%5D=1214&eurametCtcp\\_project%5Bback%5D=473&cHash=216627da95792b5891e7c1c28506eb3a](http://www.euramet.org/research-innovation/search-research/projects/details/?eurametCtcp_project_show%5Bproject%5D=1214&eurametCtcp_project%5Bback%5D=473&cHash=216627da95792b5891e7c1c28506eb3a)

<http://www.eng59-rheology.eu/>

The RMG-Researcher may have the opportunity to work with and/or produce joint papers with the following world-leading Researcher: Dr. Henning Wolf

### APPLICATION

**ADVERT REFERENCE:** ENG59 –RMG2

**CLOSING DATE:** The closing date is 23:59 CET on Monday 5 September 2016

**INTERVIEW DATES:** If interviews are required they will take place between 3 and 7 October 2016

**APPLICATION:** All applications must be submitted via [www.emrponline.eu](http://www.emrponline.eu)

An application consists of a Research Schedule (a description of the work to be undertaken), CV, covering letter, and excel datasheet.

**ELIGIBILITY:** Full eligibility criteria are given here: <http://www.emrponline.eu/downloads/Guide1.pdf>

### THE AIM OF EMRP RESEARCHER MOBILITY GRANTS

"To develop the capacity of individuals in Metrology"

The EMRP provides Researcher Mobility Grants (RMGs) to increase the capability of the European metrology researcher community, by supporting countries in building and furthering their capacity in Metrology.

\* From: *Decision No 912/2009/EC*, Official Journal of the European Union, 30 September 2009, L257, p12  
available from: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:257:0012:0025:EN:PDF>