Research in impurity assessment of hydrogen

<table>
<thead>
<tr>
<th>Location:</th>
<th>PTB, Germany</th>
<th>Placed on:</th>
<th>5 July 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration:</td>
<td>6 months</td>
<td>Closing date:</td>
<td>6 September 2022 23:59 CET</td>
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<tr>
<td>Earliest start date:</td>
<td>1 January 2023</td>
<td>Job Ref:</td>
<td>19ENG03 – RMG1</td>
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Proposed research

Within the EMPIR 19ENG03 MefHySto, PTB is investigating the impurity assessment of hydrogen according to ISO 14867, focusing on humidity contributions in pure hydrogen gas. The proposed RMG research will – depending on the background of the candidate - focus on one or more of the following alternatives:

1. based on previous work on permeation-based trace humidification of PTB’s humidity group, the RMG will work towards a portable and highly stable transfer standard for humidity, first in the air and then propose and develop ideas for transferring the concept to hydrogen gas.
2. based on a catalytic approach that generates trace water in the gas, a portable H2O generation system capable of dynamically generating trace humidity levels in a nitrogen-dominated gas stream will be set up and validated.
3. the trace H2O generator operating in N2 (ii.) will be expanded/combined with dynamic mixing to generate trace humidity in other matrix gases. Ideas will be developed for its transfer to hydrogen gas.

All the above three alternatives would be additional to the EMPIR 19ENG03 MefHySto objectives. All will require a respective humidity level, from 1 to 10 µmol/mol, and will be targeted in line with the requirements of ISO 14867.

The RMG researcher might have an opportunity to contribute to a peer-reviewed scientific paper in the relevant field.

Experience requirements

The successful candidate will have experience in trace water generation and measurements, as well as in impurity assessment and working with hydrogen. Good communication skills including good presentational skills, both oral and written

Guestworking organisation

Guestworking organisation(s) must be in a different country to the Researcher’s employing organisation.

Physikalisch-Technische Bundesanstalt (PTB) is the National metrology institute of Germany, one of the world’s most influential research institutes with an outstanding record of achievement dating back more than 125 years.

Related project

This RMG is linked to 19ENG03 MefHySto.

The overall aim of this project is to provide traceable solutions for advanced hydrogen storage technologies which are required in order to achieve the ambitious new EU energy target for renewable energy by 2030, as per the Renewable Energy European Directive 2018/2001.

For more information, please see: https://www.euramet.org/research-innovation/research-empir/empir-calls-and-projects/

Allowances

The exact allowances can be found by using the ‘RMG Administrative data’ spreadsheet available at http://msu.euramet.org/downloads/.

The 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. 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.

Eligibility (read carefully before applying)


Contact

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The aim of RMGs is to develop the capacity of individuals in metrology. EURAMET provides Researcher Mobility Grants to increase the capability of the European metrology researcher community, by supporting countries in building and furthering their capacity in Metrology.