



## **DLR – DAAD Fellowships**

### **Fellowship No. 431**

**Applicants are invited from the following disciplines:  
Materials Sciences, Chemical Engineering, Mechanical Engineering**

<b>Research Area :</b>	Energy
<b>Research Topic:</b>	<b>Analysis of reversible gas-solid reactions with water vapour for thermochemical energy storage</b>
<b>DLR Institute:</b>	Institute of Engineering Thermodynamics, DLR Stuttgart
<b>Position:</b>	Postdoctoral Fellow
<b>Openings:</b>	1
<b>Job Specification:</b>	<p>Thermal energy storage materials with superior thermophysical and thermochemical properties are important to develop efficient and cost effective thermal energy storage solutions to increase waste recovery of industrial process heat, to improve the performance of combined heat and power systems or even balance seasonal fluctuations of low grade heat demand. In addition to the primary aspect of thermal energy storage, thermochemical systems based on reversible gas-solid reactions offer unique characteristics in terms of storage duration, storage and power density, the possibility to upgrade thermal energy or to generate heat and cold on demand.</p> <p>The intended work programme of the research fellowship is focused on a detailed investigation of the reaction pair CaO and water for thermochemical energy storage with special emphasis on its structural changes during cycling.</p> <p>The detailed work programme will include</p> <ul style="list-style-type: none"><li>- Improvement of existing laboratory equipment with special focus on visualization techniques</li><li>- Detailed experimental investigations of the reaction system with varied reaction boundary conditions</li><li>- Analysis of material bulk properties and cycling stability</li><li>- Deduction of potential material or process improvements</li></ul>

**Required Qualification:** PhD completed

**Advantageous Skills:**

- Scientific background in Chemical Engineering, Materials Sciences or Mechanical Engineering
- Practical Experiences:
  - Experimental investigations of gas-solid reactions or sorption processes
  - Modelling of reversible chemical reactions
- Experience in thermal energy storage, preferably thermochemical energy storage

**English competence:** **Fluent** - See requirements on [www.daad.de/dlr](http://www.daad.de/dlr)

**Earliest Start Date:** 1.05.2020

**Duration:** 12 months, possible extension by 12 months

**Application Deadline:** 15.3.2020

**Further Information:** <http://www.dlr.de>  
<http://www.daad.de/dlr>