

Thesis Project Offer

*Joint Research and Education Programme "Palestinian-German Science Bridge PGSB"
Forschungszentrum Jülich GmbH & Palestine Academy for Science and Technology*

Thesis type*

<input checked="" type="checkbox"/> BSc	<input checked="" type="checkbox"/> MSc	<input type="checkbox"/> PhD	Intended starting date (approx.): 01/04/2023
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Contact details of supervisor/responsible host at Forschungszentrum Jülich

Title*	Degree	First name*	Surname*
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Function*	Institute and homepage of institute*
Postdoctoral researcher	IBG-3 https://www.fz-juelich.de/en/ibg/ibg-3

University affiliation in Germany*
NA

Co-Supervisor at Palestinian university (if applicable)

Title	Degree	First name	Surname
Title	Degree		

Phone	E-mail

University/institution	Department/faculty/institute

Project description*

Heavy metals adsorption and transport in light-expanded clays aggregates (LECA)

Light-expanded clay aggregates (LECA) are adsorptive material made of clay with high removal capacity for a wide range of water pollutants. LECA have been increasingly used as substrate material for constructed wetlands (purification plants). However, the literature investigating LECA affinity to heavy metals is insufficient. Existed studies are restricted to particular heavy metals with rather limited adsorption capacities. Therefore, the research activities which will be accomplished in the laboratories of the IBG-3 institute, JFZ Juelich, will focus on investigating the effects of different environmental parameters such as pH, contact time, and initial concentration on heavy metals (HM) adsorption onto LECA substrate using batch technique. Additionally, the transport and retention of heavy metals onto LECA will be elucidated using column experiments. Under this research, the effect of the initial concentration of HM, ionic strength, grain size, and flow rate on the transport behavior of the HM in the LECA filter will be instigated.

This research will enable graduate students from a Palestinian university to spend up to 3 months at IBG-3 laboratories to gain knowledge on varied analyses methods, including:

- Batch and column techniques.
- Characterization of LECA material.

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- Use of several analytical methods such as filtration, centrifuge, and determination of HM contents using ICP/MS.
- The student will gain soft skills related to isotherms, kinetics models, data analysis, reporting, and scientific writing and modeling.

Notes:

Students from chemistry, biology or environmental engineering backgrounds are encouraged to apply.

The offer is open to host multiple BSc or MSc students if the fund allows.

Date*

Signature*

31/01/2023

Rawan Mlih

* required field

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