FAroGels

MSCA Doctoral Network

DOCTORAL CANDIDATE POSITION

DC[15] – Interaction of Aerogels with Complex Food Media – Experimental & Modelling

Position	DC15 – Doctoral Candidate: Interaction of Aerogels with Complex Food Media – Experimental & Modelling
Project	FAroGels – Food-Grade Aerogels for Sustainable Food Systems
Funding programme	Horizon Europe – Marie Skłodowska-Curie Actions Doctoral Networks (HORIZON-MSCA-2025-DN-01-01)
Grant Agreement number	101312450
Recruiting/Host organisation	Hamburg University of Technology, TUHH
PhD awarding institution	Hamburg University of Technology, TUHH
Type of contract	Fixed-term employment contract, 36 months
Job status	Full-time (100%)
Application deadline	09 December 2026, 23:59 (CET)
Expected start date	March 2027 (earliest)

About FAroGels

FAroGels – Food-Grade Aerogels for Sustainable Food Systems is a Marie Skłodowska-Curie Actions Doctoral Network funded by the European Union under Horizon Europe. The network brings together academic and non-academic partners with complementary expertise in food science and technology, materials science, biopolymer science, biotechnology, process engineering, analytical characterization, packaging and sustainable innovation. **FAroGels** aims to develop, characterize and validate food-grade, bio-based and biodegradable aerogels for sustainable food systems. The network will investigate how these highly porous materials can support more efficient food processing, improved food quality and safety, nutritional and sensory functionality, protection and delivery of bioactive compounds, and sustainable packaging solutions.

Position Description

This position forms part of the **FAroGels** research program on food-grade, bio-based, and biodegradable aerogels and their application in sustainable food systems. The selected candidate will be employed by Hamburg University of Technology (TUHH) and will be required to enroll as a PhD student at Hamburg University of Technology (TUHH), in accordance with the relevant admission and enrolment requirements.

- The doctoral project will focus on Interaction of Aerogels with Complex Food Media – Experimental & Modelling.
- The Doctoral Candidate will investigate how food-grade aerogels interact with complex food environments such as syrups, oils, emulsions, sauces and semi-solid matrices. The project will establish mechanistic structure–property–function relationships describing dynamic processes including swelling, shrinkage, liquid uptake, softening and partial disintegration, which determine aerogel performance in stabilisation, controlled release, sensory modification and shelf-life enhancement. The candidate will combine advanced experimental characterisation with multiscale modelling. Surface and bulk properties, including polarity, hydrogen bonding, rigidity, pore structure, charge, sorption kinetics and viscoelasticity, will be analysed using ATR-FTIR, NMR relaxometry, DSC/TGA, BET analysis, rheology and dynamic sorption. Real-time changes in complex media will be studied using optical and X-ray imaging, swelling analysis, tribology and microfluidic tools. Modelling activities will include diffusion–sorption models, continuum mechanics, coarse-grained simulations and data-driven predictive approaches. The goal is to develop predictive tools and practical guidelines for selecting aerogels for specific food applications. Hosted at TUHH within FAroGels, the project includes secondments at METU, Barilla and Aerofybers, providing

complementary training in rheology, oral tribology, surface interactions, high-speed imaging and industrial aerogel processing. Using materials and data generated across the network, the candidate will build harmonised descriptors that support robust prediction, rational material selection and translation toward future industrial deployment.

- The position will involve laboratory-based research, data analysis, scientific communication and close collaboration with other FAroGels Doctoral Candidates, supervisors and partner organizations.

Supervisory Team

The Doctoral Candidate will be supervised by a team combining academic and non-academic expertise:

Role	Name	Organisation	Country
Main supervisor	Dr. Irina Smirnova	Technische Universitat Hamburg (TUHH)	Germany
Academic co-supervisor	Dr. Pavel Gurikov	Technische Universitat Hamburg (TUHH)	Germany
Industry supervisor	Dr. Marc Fricke	aerogel-it GmbH (AIt)	Germany

Planned Secondments

As part of the training programme, the Doctoral Candidate will complete planned secondments at FAroGels partner organisations:

Host organisation	Sector	Country	Duration
Middle East Technical University (METU)	Academic	Türkiye	2 months
Barilla G. e R. Fratelli SpA	Non-academic	Italy	3 months
Aerofybers Technologies S.L.	Non-academic	Spain	3 months

Main Responsibilities

The Doctoral Candidate will be expected to:

- Conduct research on development, characterization and validatation of food-grade, bio-based and biodegradable aerogels for sustainable food systems
- Plan, perform, document and analyse experimental work using relevant laboratory, analytical, processing and/or modelling methods.
- Participate actively in FAroGels network meetings, workshops, training schools, seminars and transferable-skills activities.
- Undertake planned secondments at FAroGels partner organisations, as specified for the DC project.
- Work collaboratively with academic and non-academic partners across the FAroGels network.
- Prepare scientific reports, project deliverables, presentations, publications and, where relevant, other dissemination or exploitation-related outputs.

Requirements

- **Educational Background**: Master's degree (or equivalent) in process engineering with focus on food technology, thermal separation processes or chemical engineering
- **Skills**: Strong laboratory and analytical skills, specific analytics are among others, adsorption isotherm and surface investigations, optical –metrical measurements and the resulting interpretations.
- **Languages**: Proficiency in English (written and spoken) is required, good skills of German language for day-to-day conversations is recommended.
- Strong motivation to pursue doctoral research in an international and interdisciplinary environment.
- Ability to work independently while contributing effectively to collaborative research activities.
- Willingness for instructing and supporting undergraduate students
- Good organization, communication and problem-solving skills.
- Willingness to travel for planned secondments, network meetings and training activities.
- Commitment to responsible research conduct, inclusion, collegiality and professional development.

MSCA Doctoral Network Eligibility Criteria

Applicants of any nationality are welcome to apply. At the date of recruitment, applicants must meet the following MSCA Doctoral Network requirements:

- **Doctoral candidate status:** Applicants must not already hold a doctoral degree. Applicants who have successfully defended their doctoral thesis but have not yet been formally awarded the doctoral degree are not eligible.
- **Mobility rule:** Applicants must not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 36 months immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention or EU temporary protection are not taken into account. **Compliance is verified before the start of employment, on the basis of the candidate's passport and, where necessary, other documents.**

- **PhD enrolment:** Doctoral Candidates must be enrolled in a doctoral programme leading to the award of a doctoral degree in at least one EU Member State or Horizon Europe Associated Country. For this position, this is the doctoral programme at TUHH; applicants must therefore meet its admission requirements.
- **Institution-specific requirements:** The MSc Grade from the home university of the applicant must be approved by the German academic exchange service (DAAD) as equivalent to German national regulations. Please upload your MSc transcript and, where available, an official document explaining your university's grading scale.

→ **Visa and residence permit:** a visa or residence/work permit is not required at the application stage and is not a selection criterion. Where needed, it will be arranged after selection and before the start of employment, with the support of the recruiting organisation. Candidates from non-EU countries are equally welcome to apply.

What FAroGels Offers

- A full-time doctoral position funded through the **FAroGels** MSCA Doctoral Network.
- A fixed-term employment contract for 36 months at TUHH.
- A competitive salary and employment conditions in accordance with the MSCA Doctoral Networks funding provisions, applicable national legislation and the policies of the Recruiting / Host Institution.
- Social-security coverage and other employment-related benefits in accordance with the applicable national and institutional framework.
- A Personal Career Development Plan (PCDP), prepared with the supervisory team and reviewed and updated during the project.
- Access to research facilities, infrastructure, training and support services at the Host Institution and within the FAroGels network.
- Participation in a structured doctoral training programme including scientific and technical training, transferable skills, career development and innovation-oriented activities.
- Planned secondments at FAroGels partner organizations, offering complementary scientific, technical and cross-sectoral experience.
- An international research environment and opportunities to build a professional network across academia and non-academic organizations.

Salary and Financial Package

This position is funded by the FAroGels MSCA Doctoral Network (HORIZON-MSCA-2025-DN-01-01, Grant Agreement No. 101312450). The salary is based on the following monthly MSCA allowances:

- **Living allowance:** EUR 4,010, adjusted **by the country correction coefficient** of the country of the recruiting organisation to ensure equal treatment and comparable purchasing power for all researchers.
- **Mobility allowance:** EUR 710, contributing to mobility-related costs such as relocation and travel.
- **Family allowance (if applicable):** EUR 660, paid for the months in which the Doctoral Candidate has a family during the project, including where family obligations arise after recruitment. 'Family' means persons linked to the researcher by marriage (or a relationship with equivalent status recognised by the legislation of the country where it was formalised) or dependent children actually being maintained by the researcher. The allowance is paid in accordance with the rules of the recruiting organisation, and supporting documents may be requested.

Monthly MSCA allowances for this position

Component	Calculation (per month)
Living allowance	EUR 4,010 × [country correction coefficient = 101.2%] (see guidance below)
Mobility allowance	Fixed amount = EUR 710.00
Total without family allowance	Living + mobility allowance
Total with family allowance	Living + mobility + EUR 660

Please note: *the amounts above represent the total employment cost, from which the employer's and the employee's compulsory social-security contributions and taxes are deducted in accordance with national law. Unless the recruiting organisation provides additional funding, the gross salary paid to the Doctoral Candidate is therefore lower than these amounts, and the net salary depends on personal circumstances.*

Country correction coefficients of the FAroGels beneficiaries

Country	CCC	Living allowance	+ mobility (EUR 710)	+ family (EUR 660)
Türkiye	64.5%	2,586.45	3,296.45	3,956.45
Poland	74.1%	2,971.41	3,681.41	4,341.41
Italy	95.3%	3,821.53	4,531.53	5,191.53

Country	CCC	Living allowance	+ mobility (EUR 710)	+ family (EUR 660)
Spain	95.6%	3,833.56	4,543.56	5,203.56
Germany	101.2%	4,058.12	4,768.12	5,428.12
Finland	118.0%	4,731.80	5,441.80	6,101.80
United Kingdom	141.7%	5,682.17	6,392.17	7,052.17

Employment conditions: the Doctoral Candidate will be hired full-time (100%) by the recruiting organisation on a 36-month employment contract, with social-security coverage under national law that continues during secondments.

Funding Duration and PhD Completion

- This Doctoral Candidate position is funded by the FAroGels MSCA Doctoral Network for a maximum period of 36 months.
- The overall period required to complete a PhD degree may, depending on the regulations of the PhD awarding institution and applicable national requirements, extend beyond the 36-month FAroGels funding period.

Please note: *any employment, scholarship or other financial support beyond the 36-month FAroGels funding period is not covered or guaranteed by FAroGels. Any potential continuation of employment or funding would need to be considered separately between the relevant institution and the Doctoral Candidate, subject to institutional regulations and the availability of funds.*

About the Host and PhD Awarding Institution(s)/Organizations

Since the institute of Thermal Separation Processes was founded in 1982, high pressure engineering has a long academic research tradition. A focus is now the investigation of the production processes of nano- and mesoporous materials (aerogels) in lab and pilot scale, including sol-gel process, coating and impregnation with active ingredients, providing the aerogels with exceptional properties for a variety of applications. Another area of research is the study of a selective fractionation of lignocellulosic biomass by liquid hot water hydrolysis (LHW), enzymatic biomass degradation and supercritical CO_2 extraction. The laboratory also develops molecular methods for the design and optimization of separation processes based on micellar systems, especially for life science. Other research topics include experimental and theoretical works concerning, supercritical fluids, accompanied by the thermodynamics of biological relevant systems and downstream processes.

The successful candidate must fulfil the admission and enrolment requirements of **TUHH**

Item	Information
Doctoral programme / doctoral school	School of Process Engineering , Graduate Academy
Relevant faculty / department	Institute of Thermal Separation Processes
PhD admission and enrolment requirements	Please refer to the official document "Promotionsordnung" of the TUHH (in german): https://www.tuhh.de/t3resources/tuhh/download/universitaet/verwaltung/ra/Ordnungen_und_Richtlinien/Promotionsordnung_20241218.pdf
Official PhD admission / enrolment webpage	Please refer to "https://www.tuhh.de/tuhh/tu-hamburg/arbeiten-an-der-tu-hamburg/stellenausschreibungen/wissenschaftliche-mitarbeit"
Separate PhD application or enrolment procedure	Yes. Please refer to the official TUHH enrolment and admission web page https://www.tuhh.de/tuhh/tu-hamburg/arbeiten-an-der-tu-hamburg/stellenausschreibungen/wissenschaftliche-mitarbeit" and check for the FaroGels offer of the Laboratory " Institute for Thermal Separations Processes"
Recognition of foreign qualifications	For degrees obtained abroad, submit all degree certificates (Diploma/Master's and Bachelor's), including a transcript of subjects and grades, both in the original language and with a translation into German or English. Conversion procedure for evaluation marks https://www.kmk.org/fileadmin/Dateien/pdf/ZAB/Hochschulzugang_Beschluesse_der_KMK/GesNot05.pdf, https://www.uni-hamburg.de/campuscenter/bewerbung/international/studium-mit-abschluss/anerkennung-auslaendischer-schulbildung/notenumrechner.html

Application Documents

Please submit the following documents:

- A detailed curriculum vitae, including education, research experience, technical skills and relevant achievements.
- A motivation letter explaining your interest in this specific DC position, your relevant background and your suitability for the project.
- Copies of Bachelor's and Master's diplomas and academic transcripts, or evidence that the relevant degree will be completed before the recruitment date.
- Contact details for two referees and reference letters.
- Proof of English-language proficiency, if required by the PhD awarding institution.
- Incomplete applications may not be considered.

How to Apply

Applications for this position must be submitted through **both** of the following channels:

1. **Direct application to the recruiting organisation:** Applications should be submitted through the recruitment portal https://www.tuhh.de/tuhh/tu-hamburg/arbeiten-an-der-tu-hamburg/stellenausschreibungen/wissenschaftliche-mitarbeit. We will also advertise the position on the EURAXESS Jobs Portal.
2. **FAroGels online application form** – in addition, please complete the application form at https://farogels.eu/apply/ and upload the same documents there.

Indicative timeline

- **Application deadline:** 09 December 2026, 23:59 (CET)
- **Interviews:** January 2027
- **Evaluation:** February 2027
- **Selection outcome:** February 2027
- **Expected start of employment:** March 2027 (earliest)

Please note: *Applicants should ensure that all required documents are submitted before the stated deadline. Please note that a separate PhD admission and/or enrolment procedure may apply at TUHH.*

Selection Process

FAroGels follows an open, transparent and merit-based recruitment process in line with the European Charter for Researchers:

- Eligibility check by the FAroGels Project Manager.
- Evaluation of the eligible applications by an Interview Committee (primary supervisor, co-supervisor(s) and a representative of a non-academic partner) with a standardised scoring matrix; the three to five best-ranked candidates are shortlisted.
- Online interview with the shortlisted candidates.
- Approval of the selection by the FAroGels Supervisory Board, after which an offer is made.

All applicants are informed of the outcome and receive feedback on request.

Equal Opportunities and Data Protection

FAroGels and TUHH are committed to equal opportunities, diversity and inclusion. Applications from all qualified candidates are welcome, irrespective of gender, gender identity or expression, sexual orientation, ethnic or social origin, nationality, disability, age, religion or belief.

Personal data submitted with applications will be processed by TUHH exclusively for recruitment purposes and in accordance with the applicable data-protection legislation and institutional privacy policies.

Contact Information

- **For scientific questions regarding the DC project, and questions regarding the application process and/or PhD admission and enrolment please contact:**

Prof. Dr. Irina Smirnova
Institut für Thermische Verfahrenstechnik
Technische Universität Hamburg
Email via : secretary.tvt@tuhh.de

- **General questions about FAroGels and the recruitment process:** FAroGels Project Management Team, Middle East Technical University (METU), Ankara, Türkiye – farogels@metu.edu.tr
- **General information on FAroGels:** https://farogels.eu/



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