FAroGels

MSCA Doctoral Network

DOCTORAL CANDIDATE POSITION

DC[9] – Industrial Insulation Applications of Reinforced Cellulose-Based Aerogels

Position	DC9 – Industrial Insulation Applications of Reinforced Cellulose-Based Aerogels
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	Aerofybers Technologies S.L. (AFyb), Paterna (Valencia), Spain – a spin-off technology-based company dedicated to the industrial development of cellulose-based aerogels. Research activities will be hosted at the Packaging Group – BIOFUN Laboratory of IATA-CSIC by virtue of the Aerofybers–CSIC collaboration agreement.
PhD awarding institution	Universitat Politècnica de València (UPV), Doctoral School, PhD Programme in Food Science, Technology and Management, Food Technology Department, Valencia, Spain
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	July 2027

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 programme on food-grade, bio-based and biodegradable aerogels and their application in sustainable food systems. The selected candidate will be employed by Aerofybers Technologies S.L. and will carry out the experimental work at the Packaging Group – BIOFUN Laboratory of IATA-CSIC in Paterna (Valencia), Spain, under the collaboration agreement established between Aerofybers Technologies and CSIC. The candidate will be required to enrol as a PhD student at the Universitat Politècnica de València (UPV), in accordance with the relevant admission and enrolment requirements.

- The doctoral project (DC9) will develop biodegradable, high-performance thermal-insulation aerogels for the long-distance transport of temperature-sensitive, high-value foods, such as premium wines and artisanal cheeses. Insulation for these products currently relies on expanded polystyrene and polyurethane foams: materials that perform well but carry a high environmental impact and no end-of-life solution.
- The PhD project will engineer cellulose-based aerogels with improved mechanical strength, moisture resistance and thermal stability through PLA/PHB reinforcement layers. Freeze-drying will be exploited to produce

custom-shaped inserts — bottle cradles, sleeves and modular insulation components — offering a genuinely sustainable alternative to petrochemical foams. Alternative ambient pressure techniques will be evaluated.

- The research will combine formulation and structure design, reinforcement strategies, freeze-drying of tailored geometries, and advanced thermal, mechanical and environmental characterization, with the goal of understanding how composition, reinforcement and pore architecture determine insulation performance under real logistics conditions.
- But the ambition goes beyond making an aerogel. We want to answer questions such as:
- Can a bio-based, biodegradable material match the thermal performance of petrochemical foams?
- How far can reinforcement strategies push the mechanical robustness and moisture resistance of a cellulose aerogel?
- Can porous architecture be designed, not just obtained, to control heat transfer?
- Can insulation be shaped to the product instead of forcing the product into a standard box?
- Being an industry-hosted position, the project maintains a strong focus on scale-up feasibility, cost, manufacturability and validation under realistic transport and storage scenarios, while retaining the scientific depth of a doctoral thesis.
- DC9 strengthens the FAroGels packaging and logistics cluster by supplying circular, bio-based thermal-insulation materials. It can incorporate cellulose-rich by-products generated in DC1, supporting closed-loop valorisation, complements the cushioning aerogels of DC8 and the active packaging systems of DC12, and feeds directly into the WP5 design guidelines.
- The position will involve laboratory-based research, data analysis, scientific communication and close collaboration with other FAroGels Doctoral Candidates, supervisors and partner organizations.

Research Objectives

- Design reinforced cellulose/PLA-PHB aerogels with enhanced thermal insulation, structural robustness and moisture resistance.
- Evaluate thermal conductivity under fluctuating temperatures, compression and recovery behaviour, humidity uptake and biodegradability.
- Develop geometrically tailored insulation inserts and validate them under realistic logistics conditions.

Expected Results

- Reinforced cellulose aerogels with improved mechanical and thermal performance.
- Datasets linking reinforcement strategy, pore architecture and environmental behaviour.
- Freeze-dried, shape-optimised insulation inserts validated in real-case simulations. Alternative ambient pressure drying techniques to be evaluated.
- Biodegradability evidence supporting the replacement of conventional petrochemical foams.

Supervisory Team

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

Role	Name	Organisation	Country
Main supervisor	Dr. Isaac Benito González Dr. Isabel Hernando	Aerofybers Technologies S.L. (AFyb) Universitat Politecnica de Valencia (UPV)	Spain
Academic co-supervisor	Dr. Amparo López Rubio	Agencia Estatal Consejo Superior de Investigaciones Científicas, M.P. (Spanish National Research Council, CSIC)	Spain
Industry supervisor	Main supervisor is non-academic.		

Planned Secondments

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

Host organisation	Sector	Country	Duration
University of Santiago de Compostela (USC)	Academic	Spain	2 months
Helsingin Yliopisto (University of Helsinki, UH)	Academic	Finland	2 months
King's College London (KCL)	Academic	United Kingdom	1 month
Perfat Technologies Oy (PT)	Non-academic	Finland	2 months

Main Responsibilities

The Doctoral Candidate will be expected to:

- Conduct DC9 research on the formulation of cellulose-based hydrogels and aerogels; PLA/PHB reinforcement layers; freeze-drying of custom geometries; moisture-resistant and hydrophobic treatments; and thermal-conductivity, compression/recovery, moisture-sorption, structural and biodegradability characterisation of the resulting materials.
- Plan, perform, document and analyse experimental work using relevant laboratory, analytical, processing and/or modelling methods.
- Contribute to the validation of insulation prototypes under realistic transport and storage conditions, and to the WP5 design guidelines.
- 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 Materials or Polymer Science, Chemical Engineering, Chemistry, Food Science and Technology, Food or Agricultural Engineering, Industrial Engineering, Biotechnology or a closely related field that provides access to doctoral studies at UPV.
- **Skills:** Strong experimental and data-analysis skills. Experience in one or more of the following areas is desirable: cellulose or biopolymer processing, hydrogel or aerogel preparation, freeze-drying, biodegradable polymers (PLA, PHB) and composite processing, thermal-conductivity or thermal-insulation measurement, mechanical and compression testing, moisture sorption, porous-material characterisation, microscopy, FTIR spectroscopy or rheology.
- **Languages:** Proficiency in English (written and spoken) is required.
- Interest in applied, industry-oriented research and in translating laboratory results towards scalable products.
- Strong motivation to pursue doctoral research in an international and interdisciplinary environment.
- Ability to work independently while contributing effectively to collaborative research activities.
- 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 Spain 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 UPV; applicants must therefore meet its admission requirements.

Institution-specific requirements: Applicants must satisfy UPV doctoral admission requirements and obtain the endorsement of the proposed thesis supervisor. Before appointment, the successful candidate must provide the documentation required for an employment contract with Aerofybers Technologies S.L. and comply with the access, health-and-safety and confidentiality requirements applicable to work at the IATA-CSIC facilities. Where applicable, the candidate must obtain the necessary visa and authorisation to reside and work in Spain.

→ **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, full-time employment contract for 36 months with Aerofybers Technologies S.L., with the research activity carried out at the IATA-CSIC facilities in Paterna (Valencia), Spain.
- A competitive salary and employment conditions in accordance with the MSCA Doctoral Networks funding provisions, applicable national legislation and the policies of Aerofybers Technologies S.L.

- Social-security coverage and other employment-related benefits in accordance with the applicable national and institutional framework.
- Supervision by an industrial supervisor at Aerofybers together with experienced academic co-supervisors at CSIC (Dr. Amparo Lopez Rubio) and UPV.
- Access to research facilities, infrastructure, training and support services at IATA-CSIC and within the FAroGels network, as well as to the pilot-scale and product-development environment of Aerofybers.
- A genuinely intersectoral training experience, combining doctoral-level research with first-hand exposure to industrial development, scale-up and innovation management in a technology-based company.
- 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 = 95.6%] (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
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

Aerofybers Technologies S.L. (AFyb) is a Spanish technology-based company devoted to the development and industrial scale-up of cellulose-based aerogels for insulation, packaging and other high-value applications. As the recruiting and host institution for DC9, Aerofybers provides the industrial perspective of the project, including product specification, prototyping, scale-up assessment and validation under real use conditions.

The experimental research will be carried out at the Institute of Agrochemistry and Food Technology (IATA-CSIC), a multidisciplinary food-research institute located in Paterna (Valencia), thanks to the collaboration agreement between Aerofybers Technologies and the Spanish National Research Council (CSIC). Within IATA's Packaging Group, the BIOFUN laboratory investigates structure-function relationships in food biopolymers and develops bio-based materials and ingredients from waste and alternative resources. Through this agreement, the Doctoral Candidate will have access to facilities for biomass processing, hydrogel and aerogel preparation, supercritical CO2 drying, high-pressure processing, rheology, spectroscopy, microscopy, thermal and mechanical analysis, moisture sorption and biodegradability/compostability testing.

The PhD degree will be awarded by the Universitat Politècnica de València through its Doctoral School and PhD Programme in Food Science, Technology and Management, which recognises IATA as a collaborating research institution. DC9 will be supervised by Dr Isaac Benito González (Aerofybers Technologies), who also acts as industrial supervisor, with Dr Amparo López-Rubio (CSIC) as co-supervisor and Dr Isabel Hernando as co-supervisor and tutor at UPV.

The successful candidate must fulfil the admission and enrolment requirements of the Universitat Politècnica de València (UPV).

Item	Information
Doctoral programme / doctoral school	PhD Programme in Food Science, Technology and Management, UPV Doctoral School
Relevant faculty / department	Food Technology Department, Universitat Politècnica de València
PhD admission and enrolment requirements	Applicants must meet the general access requirements for official doctoral studies and the programme's specific criteria. The usual route is an official bachelor's degree plus an official master's degree, or equivalent qualifications, comprising at least 300 ECTS in total. The recommended profile includes a master's degree in Food Science, Food Technology, Food Engineering, Food Safety or Food Quality. Related profiles may be admitted with up to 20 ECTS of complementary training. Supervisor endorsement is required; academic English at approximately B2 level is recommended.
Official PhD admission / enrolment webpage	https://www.upv.es/entidades/edoctorado/en/doctoral-program-in-food-science-technology-and-management/ https://www.upv.es/admision/admision-doctorado/index-en.html
Separate PhD application or enrolment procedure	Yes. Selection for the FAroGels position and admission to the UPV doctoral programme are separate procedures. The successful candidate must submit an online UPV pre-registration application and, after admission, complete enrolment. Because the FAroGels selection is expected to conclude after the standard 2026/2027 pre-registration deadline, the applicable timing must be coordinated with the UPV Doctoral School and the programme's Academic Committee.
Recognition of foreign qualifications	Degrees from EHEA countries may provide access without formal recognition if they correspond to EQF level 7 and grant access to doctoral studies in the issuing country. For degrees from outside the EHEA, UPV must verify equivalence to a Spanish master's-level qualification and that the degree grants doctoral access in the issuing country. Details: https://www.upv.es/entidades/edoctorado/en/information-for-holders-of-official-degree-issued-outside-spain/
Additional requirements	Documents issued outside the EU/EEA may require legalisation or an apostille and an official translation into Spanish. Applicants are responsible for any UPV equivalence-study and enrolment fees. Non-EU/EEA candidates may require a visa and residence/work authorisation; the selected candidate should begin these procedures promptly after receiving the formal offer.

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. Reference letters may be requested at a later stage.
- Evidence of English-language proficiency or equivalent evidence that the applicant can work effectively in English.
- A completed MSCA eligibility declaration covering doctoral status and country of residence/main activity during the 36 months preceding recruitment; a copy of a passport or national identity document; and, where applicable, certified translations and documentation required by UPV to assess a foreign degree.
- Incomplete applications may not be considered.

How to Apply

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

1. To apply, please email the required documents in PDF format to isaacbg@aerofybers-technologies.com, using the subject line 'FAroGels DC9 application - SURNAME'. Applications must be received by 9 December 2026. The vacancy will also be advertised through EURAXESS and the FAroGels website. The successful candidate will subsequently be required to complete the applicable formal recruitment procedure of Aerofybers Technologies S.L.
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:** July 2027

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 AFyb.*

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 Aerofybers Technologies S.L. 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 Aerofybers Technologies S.L. 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, please contact:**

Dr Isaac Benito González, DC9 Supervisor
Aerofybers Technologies S.L., Paterna (Valencia), Spain
Email: isaacbg@aerofybers-technologies.com

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

PhD Programme in Food Science, Technology and Management / UPV Doctoral School

Universitat Politècnica de València (UPV)
Email: doctor.aliment@upv.es
Website: https://www.upv.es/entidades/edoctorado/en/doctoral-program-in-food-science-technology-and-management/

- **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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