

Title of the thesis	PhArmaceutical Solid State devices AGainst diabetEs worsening
Acronym	PASSAGE
Reference number	007

Hosting institution	Employer
Université de Lille Website: https://www.univ-lille.fr/home/	Université de Lille Website: https://www.univ-lille.fr/home/
Hosting research unit 1	Hosting research unit 2
<u>Name:</u> U1008 Advanced Drug Delivery Systems <u>Acronym:</u> U1008 <u>Identification number:</u> <u>Address:</u> Université de Lille College of Pharmacy 3, rue du Professeur Laguesse 59006 Lille, France <u>Website:</u> http://u1008.univ-lille2.fr/	<u>Name:</u> Unité Matériaux Et Transformations <u>Acronym:</u> UMET <u>Identification number:</u> UMR 8207 <u>Address:</u> Université de Lille Cité scientifique Bâtiment C6 59655 Villeneuve d'Ascq <u>Website:</u> http://umet.univ-lille1.fr/
Principal supervisor	Co-supervisor
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Thesis information	
Keywords	Polymer blends, hot-melt extrusion, antidiabetic drugs, physical state, storage stability
Abstract	<p>We are seeking for a PhD candidate eager to work in an international and interdisciplinary project for three years. The project PASSAGE lies on the interface Pharmaceutics/Physics and will benefit from a collaboration between two laboratories of the University of Lille:</p> <ul style="list-style-type: none"> • INSERM U1008: Advanced Drug Delivery Systems, located in Lille • UMR CNRS 8207: Unité Matériaux Et Transformations (UMET), located in Villeneuve d'Ascq. <p>Dr. Susanne Muschert (pharmacist) and Dr. Emeline Dudognon (physicist) will jointly supervise the PhD thesis.</p> <p>The scientific approach aims to formulate diabetes mellitus type II drugs to treat hyperglycaemia into a once-daily dosage form by the means of hot-melt extrusion. The model drugs show low bioavailability due to short half-lives, leading to numerous daily dose intakes (of a conventional dosage form) and fluctuations within the drug-plasma concentrations, thus the patient's compliance is in decline with this long-term treatment. Controlled release dosage forms, where the active pharmaceutical ingredient (API) is embedded within a polymer matrix, can help to overcome these hurdles. However, the physical state of the API is of outmost importance within this kind of systems, since the drug release kinetics and the bioavailability crucially depend on the physical state of the drug within the polymer matrix, being either a disordered state (amorphous) or a crystalline one. The main research objective of PASSAGE is to investigate the impact of processing parameters of the rather novel pharmaceutical production technique of hot-melt extrusion with polymer blend matrices on the</p>

	<p>physical state, the release behaviour of the model drugs and the long-term stability of the device.</p> <p>The highly cross-linked working steps will take place in Lille at the Inserm U1008 site for formulation, drug dissolution and quantification studies, whereas the in-depth physical state analysis of the polymer matrix and the API will take place in the UMET lab in Villeneuve d'Ascq (both situated in the same metropole). An intersectorial collaboration will take place with Bioneer:Farma, situated in Copenhagen (Denmark) and specialised in in-vitro dissolution studies under bio-relevant conditions. But also Leistritz Extrusionstechnik will offer the opportunity of an immersion in the industrial world, this extrusion equipment manufacturer is implanted in Nuremberg (Germany). In addition, a secondment in the research lab of Prof. DeBeer at the University of Ghent (Belgium) is planned. He is an internationally recognized expert in process analytical technology (PAT) applications.</p>
<p>Expected profile of the candidate</p>	<p>University studies of Pharmaceutics (ideally specialized in formulation/ pharmaceutical technology), Engineering (specialized in pharmaceutical or nutritional process technology) or Physics (ideally specialized in disordered systems). Capacity to work in a multidisciplinary team and in various environments. Fluent English skills (written and spoken). Good organizational and communicational skills.</p>
<p>Application procedure & Eligibility criteria</p>	<p>The application procedure and eligibility criteria are detailed on the European doctoral programme PEARL website www.pearl-phd-lille.eu. The funding is managed by the I-SITE ULNE foundation which is a partnership foundation between the University of Lille, Engineering schools, research organisms, the Institut Pasteur de Lille and the University hospital.</p> <p>The application file will have to be submitted before March 31, 2021 (10:00 AM - Paris Time) and emailed to the following address : international@isite-ulne.fr.</p>
<p>Net salary and Lump Sum</p>	<p>A net salary of about €1,600 + €530 per month to cover mobility, travel and family costs.</p>

13 PhD positions fully funded in Lille, France for September, 1st 2021!

PEARL, Programme for Early-stage Researchers in Lille, is offering 13 prestigious PhD positions co-funded by the European Commission and the I-SITE ULNE Foundation. Only 13 positions among the 16 listed below will be funded. A web link for every PhD project will redirect you towards more detailed information.

This call is being advertised worldwide in order to recruit PhD students who will respect the mobility rule (see below). The applicants will have to send their application *via* the following email address: international@isite-ulne.fr, following an evaluation on file, selected applicants will be invited to interviews (videoconference).

Please, carefully check the following eligibility criteria before applying. In case of any doubt, please contact contact@pearl-phd-lille.eu or check out the latest updates on www.pearl-phd-lille.eu.

Unique advantage of PEARL:

In the framework of this doctoral programme, as fellows, you will have the opportunity to pursue your research in a dynamic environment. The students will participate in innovative training sessions, international conferences, networking sessions with fellows from different fields and weeks dedicated to exploring the opportunities offered by companies, regional authorities and associations.

Secondments with non-academic partners and/or foreign research units will be mandatory for all after-mentioned research projects.

Alongside your research activities you will be helped by the programme management team for any information and support related to your move and your stay in France.

As Marie Skłodowska Curie fellows, you will receive a net PhD salary (\approx €1,600) alongside a monthly lump sum to cover your mobility, family and travel costs (= €530).

Applicants eligibility:

- ✎ *Mobility rule:* Applicants from all countries are eligible. However, you cannot apply if you have resided or carried out your main activity (work, studies)¹ in France for more than 12 months during the 3 years immediately preceding the call deadline (**03/31/2018 - 03/31/2021**).
- ✎ As Early-Stage Researchers (ESR) you shall be, at the time of recruitment by the host organisation (on September 1st), in the first four years of **your** research career and not have been awarded a doctoral degree yet. The four years start to count from the date

¹ Time spent as part of a procedure for obtaining refugee status under the Geneva Convention and/or short stays such as holidays are not taken into account.

when a researcher obtained the degree which would formally entitle him/her to embark on a doctorate.

- ✎ You must have a master's degree or equivalent university degree (with respect to the requirements of the host institutions and the regional doctoral school) earned no more than 4 years prior to the call deadline (March 31, 2021) and in hand by the start of the PhD contract (before August, 31 2021).
- ✎ Selected PhD students will have to move to France and own a French postal address during all the duration of the thesis.

Additional information:

- ✎ Upon discussion with the potential supervisors, you are welcome to modify/add elements to the PhD project proposal (in the dedicated part of the application form).
- ✎ One candidate can only apply for one research project within the framework of PEARL.
- ✎ PEARL PhD students shall participate in mandatory activities and trainings during their 3-year degree. The doctoral degree must be awarded to the students at the end of the 3 years.
- ✎ PEARL programme will fund the PhD students for a 3-year period of time. You can apply for a PhD in 'cotutelles' but the degree will not last more than 3 years.

Proposed PhD research projects:

The following offers are available on our website: <https://www.pearl-phd-lille.eu/en/phd-candidate/available-phd-positions>

- [MATisSE - Development of an instrumented microfluidic culture system to study tumour-stroma interaction and drug sensitivity of pancreatic adenocarcinoma](#)
- [FlaxTronic - Micro-Electronic Assisted flax dew retting](#)
- [TOPAZ - Assessing the toxicity of plastic fragments on zooplankton ecology via video tracking and behavioral analysis](#)
- [FLIRBATTEX - Flexible fabric-based fire retardant batteries for applications in smart textiles](#)
- [PASSAGE - PhArmaceutical Solid State devices AGainst diabetEs worsening](#)
- [TFClass - Leveraging multi-omics data to implement a Transcription Factor Classifier](#)
- [CID - Catalysis Inducing Diodes for sustainable chemistry](#)
- [PERIL - Development and improvement of a PERifusion chamber for the analysis of hormonal secretions of Islets Langerhans and evaluation of the metabolism of the cell](#)
- [POMADE-CoV - Porous materials for the capture and the decomposition of coronaviruses](#)

- **RIMED - Rewiring programmed cell death and Inflammation via Modulation of ERK signalling Dynamics**
- **METEOR - Dimensionality engineering of heteronanostructures**
- **SOCIETAL WEB TRACKING - The Societal Impact of Omnipresent Invasive Tracking on the Web: A rigorous study of the technologies, challenges, risks, defences and user perception of Web tracking.**
- **OSCAR - Optimal techniques for Smart grid Charging of Autonomous electrical vehicles with Renewable energy sources**
- **MOLTEN - Integrated Biomass Fractionation and Platform Molecules production with Lignin Valorization**
- **MusQUA - MULTI-scale processing of Spatio-temporal data applied to air Quality in Urban Areas**
- **SENESIMEX - Computer Simulation and Experiments of Radio-Induced Cell Senescence**

Documents required for the application:

- ✎ Application form duly completed (see annex)²;
- ✎ An identity paper (ID, Passport);
- ✎ A 2-page CV/ résumé;
- ✎ A 2-page cover letter;
- ✎ At least one reference letter;
- ✎ Certificate of enrolment in a Master degree in case you cannot provide the ongoing diploma (see annex);
- ✎ Sworn statement on compliance with the mobility rule (see annex);
- ✎ Evidence of English proficiency (minimum B2 or equivalent) [Free online test: <https://dialangweb.lancaster.ac.uk/>];
- ✎ Grades obtained during your last 3 years of graduate studies and a description of the degree programme and courses taken for studies completed outside of France. (with translation for documents that were not obtained from an English- or French-speaking country – Official academic transcripts must be provided for each semester of each year.)
- ✎ Copy of post-secondary diplomas (with translation for degrees that were not obtained from an English- or French-speaking country; at this stage these copies do not have to be legally authenticated)

To finalize your application, send these documents *via* the following email address: international@isite-ulne.fr

² <https://www.pearl-phd-lille.eu/en/phd-candidate/call-phd-students-eligibility>

Evaluation criteria:

Step 1 – Evaluation on file

Criteria	Weight	Subcriteria
Scientific excellence	/60	Academic education and training Academic excellence (<i>incl.</i> prizes, publications, participation in international programmes such as Erasmus) Dual degree/diploma
Adequacy of the career plan and the thesis project	/20	Ambition both in relation to the PEARL Project/s applied for and in relation to the applicant's research interests more broadly.
Research experience	/20	Research environments within and outside of the Higher Education sector, as well as sectors and organisations which are impacted by research outcomes.
Total score	/100	

Step 1: Evaluation Criteria (Application Files)

You must be awarded a minimum total score of 80 in step 1 and the top-3 best candidates will be eligible for step 2.

Step 2 - Interview

Criteria	Weight	Subcriteria
Motivation	/40	Analysing their knowledge of the environment of the position they are applying for.
Career prospects	/35	Adequacy of their profile with the research topic and challenging their future career.
Communication	/15	Ability to communicate in English concerning the potential societal impact of the PEARL research project they are applying for.
3I potential	/10	Willingness and potential to work in an interdisciplinary, intersectoral and international context.
Total score	/100	

Step 2: Evaluation Criteria (Interview)

Deadline and results

The application file has to be sent by email to international@isite-ulne.fr before **March 31, 2021** (10:00 am – Paris time). Please copy the thesis directors to your email.

In April 2021, you will be informed if you pass or not the first step of the procedure. Two weeks after you will be interviewed by video conference by our committee (**between April, 12 and April, 24**). The results will be published by the end of May 2021.

If you pass the interview you will be redirected toward the competent services which will allow you to proceed to your administrative registration. The PhD will start on September 1st, 2021.