PRISM

PhD Research Programme for International Training in Sustainable Soft Matter

PhD PROJECT CALL – GUIDELINES

Contents

Executive Summary

These guidelines are intended for researchers who wish to submit a PhD project proposal under the PRISM COFUND programme (EU funding). They outline the submission requirements, the co-funding mechanism, and the proposal evaluation and selection process.

The programme will select up to 30 project proposals, which will subsequently be presented to prospective doctoral candidates. Please note the following:

→ The deadline for submitting a proposal to this call is 30 May 2026.
→ The minimum cofunding request is 67k€.
→ The PhD project should address the ecological transition challenges from a soft matter science perspective.
→ To receive funding, a project must first be selected by the programme and subsequently chosen by a doctoral candidate.
→ The project start date is 1 March 2027.

CALLS PROCEDURE AND CALENDAR

Main theme of research

Challenges of the ecological transition in the field of soft matter science.

Context

The PRISM programme (PhD Research Programme for International Training in Sustainable Soft Matter) is an EU funded COFUND project. It is an ambitious **doctoral initiative at PSL University** designed to train highly skilled researchers capable of addressing **key challenges of the ecological transition**. Building on PSL's strong expertise in soft matter, microfluidics, fluid mechanics, and industrial process sciences, **PRISM focuses on four major scientific challenges**: (1) developing eco-friendly chemical processes, (2) supporting a circular economy, (3) advancing renewable energy concepts, (4) and improving carbon capture, storage, and valorisation.
The programme will **recruit 30 outstanding PhD candidates** in two cohorts through a competitive two-stage international selection process following EU rules.

PRISM is implemented within the **European Commission's** COFUND framework, which provides **partial funding complemented by additional public and/or industrial resources**. The COFUND grant has been awarded to PSL University, which has delegated full management of the programme to ESPCI Paris – PSL. Therefore, all PhD's will be employed by the ESPCI, but the projects can take place in the following PSL establishments: Chimie ParisTech (ENSCP), Collège De France, Ecole Normale Supérieure (ENS), Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (ESPCI Paris), and Mines Paris.

Timeline

PRISM will be organised in two calls for applications, resulting in the recruitment of 30 PhD students in total (up to 15 for the 1st call and up to remaining fellowships for the 2nd call).

- Call 1: 2026–2027
- Call 2: 2027–2028

Selection process

1. Launch of the internal call for PhD proposals within PSL (deadline: **31 May 2026**)
2. Selection of a maximum of 30 PhD proposals to be included in the catalogue of Open PhD Proposals. Applicants may further shape the selected proposal during the interview stage.
3. Launch of the call for applications for doctoral candidates (DCs). Supervisors are not directly involved in the candidate selection process.
4. Evaluation of applications by the Evaluation Committee (external experts).
5. Organisation of candidate interviews (Director of the hosting lab will be part of the jury)
6. Final selection of doctoral candidates and start of recruitment.

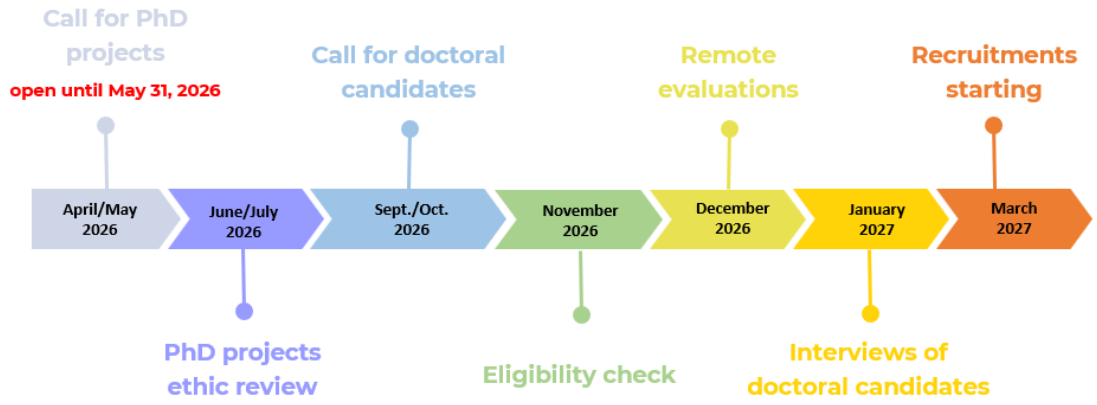


Figure 1:PRISM calendar for the first call (2026 – 2027)

Please note that the **timeframe from the PhD call to the recruitment of doctoral fellows is longer than usual** due to COFUND requirements and the obligation for **applicants to hold a master's degree** at the time of application. **PhD theses will start from 1 March 2027**.

PhD Project's submission

All PhD projects must be **submitted via the dedicated platform by filling in the project form and uploading the mandatory attachments** (refer to eligibility criteria selection). A research team may submit multiple PhD projects, provided each is submitted as a separate form.

The project form is available on the call platform[1] at the following link:
https://prism-call-2026.sciencescall.org

The PhD project form includes the following sections:

- **Excellence of the scientific Project:** Title of the PhD project; Description of the PhD project; Keywords; Research unit name and description; Name of the supervisor and co-supervisor (if any).
- **Quality of monitoring and supervision availability:** Quality of monitoring and availability of the supervisor, and of the co supervisor (if any); description of the 3i aspects of the project: interdisciplinary, international, intersectoral.
- **Additional questions:** Expected Profile of the candidate; Source and details of co-funding for this PhD project; Ethical issues addressed; contact e-mails.

Up to 30 PhD projects for each call will be selected by the PSL scientific committee to be offered to candidates. The selection criteria of the PhD projects are detailed at the end of this document.

[1] The **Sciencescall** platform requires users to create an account in order to submit an application and manage their project proposal.

PhD programme

When drafting PhD projects, supervisors should account for PhD students' mandatory participation in the PRISM programme, **including 180 hours of training over three years** (scheduled by the ESPCI and training partners), with international secondments, industrial short stays, and dissemination activities (Table 1).

Figure 2: PRISM training programme

All DCs must undertake a **compulsory international secondment** in leading academic laboratories, as well as at least one **short stay with industrial partners**, to be determined between the student and supervisors. The secondments must be **defined and integrated into the PhD project**. Each secondment will be formalized through an agreement between the ESPCI and the host institution, with a designated scientific referent and dedicated meetings before, during, and after the stay.

Table 1: PRISM training courses

Training courses	Detail
1 - High level scientific and technical training on soft matter	- Attendance to seminars, conferences and winter/summer schools. - Compulsory one-month secondment with an international partner. - Intersectoral short stays to non-academic partners.
2 - Ecological transition and soft matter courses	- Anthropocene, social responsibility and life-cycle analysis. PhD students will be encouraged to include a reflection on LCA in their thesis.
3 - Smart career development training	- Career workshops, individual career guidance, networking events and company visits.
4 - Outreach programme	- Specific training schemes on science for society, science communications, etc. - Presentation of their research and results to a broad public through annual dissemination activities.
5 - Advanced transferable skills training	- Including a transferable skills cursus covering topics like Open Access, Industrial safety, Ethic and integrity, grant application and management, Diversity and inclusion.
6 - Innovation and entrepreneurship	- Entrepreneurship training, including courses on innovation, intellectual property. - Access to a 105-hour deep tech course if relevant. - Possible meetings with start-ups, PSL incubators or coaching program.

Open PhD notion

"Open PhD proposals" means PhD proposals that doctoral candidates will have the opportunity to fine tune during their interview.

Example of an open PhD proposal:
Professor XX's team at the YY laboratory, specialists in electrochemistry, would like to launch a thesis on the recovery of CO_2 from the atmosphere. There are several ways of recovering CO_2 from the atmosphere. It can be captured directly from the air using absorbent materials such as amine solutions. The project aims to recover CO_2 from ocean water. This approach has two advantages: The concentration of CO_2 is 50 to 60 times greater in the ocean than in the air, and the process is limited to recovering CO_2 from the ocean, not capturing it. Capture in ocean relies on natural equilibria, whereas air processes require a complex capture phase. Professor XX has contacts with the AA industrial group in France and the ZZ and WW academic groups in Amsterdam and the USA. The candidate will be able to define secondments in these groups. The candidate is invited to propose an electrochemical CO_2 recuperation process, either acidic to produce CO_2 or basic to produce carbonate. Candidate may choose to focus their study on the microscopic mechanisms involved in CO_2 dissolution or precipitation, or to propose the realization of a prototype taking into consideration of flows, flow control and concentration fields near the electrodes. As far as the process is concerned, it is advisable to use a life cycle analysis.

Funding rules

All PhD's will be **employed by the ESPCI** regardless of the location where the PhD will be carried out.

The budget per PhD project covers a **36-month PhD thesis** and includes:

covered by **EU FUNDING** (118 00 €) + **COFUNDING*** (67 000 € minimum)			*covered by* **in-kind or additional contract**
PhD salary 	**PhD training and management** 	**PhD Mobility** 	**PhD Research costs** 
approx. **2200 € monthly net salary** + possible employer-covered transport/health insurance	Training courses, project management & PhD scholarship.	**7200 € max** for PhD travel/missions (short stays with industrial partners, international secondments).	PhD operating costs in the lab, such as consumables, working station, etc.

COFUND support is partial and must therefore be complemented by additional **funding sources**:

- The PhD project includes EU funding (118k) + **the cofunding* (minimum 67k)**. This envelope covers the salary, training and management costs, and travel costs.
- The **research costs are even in-kind contribution from the host lab** (estimated to at least 18k for 36 months) **or provided by the industrial contract** (additional funding of at least 45k recommended, as typically done in CIFRE thesis).

***Cofunding >67k** options include:

- **Industrial partner:** The partner must sign the PRISM standard commitment letter (Annex D). If the PhD proposal is accepted, a bilateral partnership agreement will be signed between the ESPCI and the partner.
  Standard commitment letter for industrial partner:
  https://dl.espci.fr/ticket/c39c69e33517415bec648251352ac1f8

- **Public funding[2]:** The PhD proposal must be approved as a fundable project by the co-funder's COPIL before submission with a commitment letter (Annex E). For PSL Grands Programmes, please refer to the relevant programme calendar and website.
  Template of commitment letter for public funding:
  https://dl.espci.fr/ticket/e7b474f0e4d8a07b95c5062d9f68cdb8

- **Internal resources:** Funds must not require justification to another agency (such as ANR). The laboratory director must sign a commitment letter (Annex F) certifying fund availability. If the project is accepted, a bilateral fund-transfer agreement will be signed between the ESPCI and the fund-holding institution.
  Template of commitment letter for lab own resources:
  https://dl.espci.fr/ticket/c7859aa02324856d906044232d843a2d

Recruitment of PhD fellows

Doctoral Candidates will be selected according to the following eligibility criteria:

- ☑ At the time of application, applicants must be **in possession of their Master's degree or equivalent/postgraduate degree**. All applicants with a doctoral degree are ineligible.
- ☑ A minimum level of **English C1** (Advanced) is mandatory. No level in French is required.
- ☑ Applicants must fulfil the **transnational mobility rule**: open to all nationalities but all incoming applicants must not have resided or carried out their main activity (work, studies, etc.) in France for more than 12 months in the 3 years immediately prior to the call for applications deadline.
- ☑ Applicants must be **available to start** the programme on schedule.

Supervisors are excluded from the candidates' selection process, as required by the COFUND rules. Before recruitments, supervisors will help advertising the PhD projects in their network to maximise their chance of being selected by possible applicants. During the thesis, supervisors will be instrumental in helping the DCs to identify and address their research development needs. They will integrate the DC into research group activities, including seminar series and staff meetings.

[2] Regional or national fundings, PSL Grands Programmes (METASOFT, CHEMAI, IPGG) or CMA MERCASTO can be considered for public fundings.

"A Single Employer, A Single Salary"

- All PhD students will be employed under ESPCI contracts which has received the management delegation from PSL to ensure that everyone receives the same salary.
- All PhD scholarships will be managed by the ESPCI.
- The recruitment process for this project is committed to gender parity and inclusion. Selection criteria are impartial and based solely on merit, ensuring that personal connections do not influence the assessment of applicants.

Contact & information

For further information about the calls and selection procedures, please contact the PRISM Managing Team by email: **contact@prism.psl.eu**

ELIGIBILITY RULES

The PhD projects must comply with the following **eligibility criteria**:

All potential PhD supervisors are either full-time researchers or faculty members holding **permanent employment in one of the PSL's Joint Research Units** (Annex B) into the following list of PSL establishments:

1. Chimie ParisTech (ENSCP)
2. Collège de France
3. Ecole Nationale Supérieure (ENS)
4. Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (ESPCI Paris)
5. Mines Paris

All potential PhD supervisors (or the co-supervisor) must be in possession of the **HdR** (Certified research director) Diploma or equivalent.

Only PhD proposals corresponding to one or several of the four **research Themes** will be considered eligible (see detail in Annex A):

- Developing eco-friendly chemical processes (T1),
- Building a circular economy (T2),
- Researching innovative concepts for renewable energies (T3),
- Researching innovative concepts for carbon capture storage and valorisation (T4).

The PhD proposal will need to respond to the following aspects:

- **3i dimensions** (interdisciplinary, international, intersectoral)
- Address **ethical** issues
- **Opened science practices** in line with the Open Science Charter from PSL.

The PhD project must have a fully secured budget, including a **minimum co-funding** amount of **67 000 € (+ additional funding for research costs).**

PhD Projects must be submitted via the **dedicated call platform** (Sciencescall) before the deadline, and written exclusively **in English**. All sections of the submission form must **be fully completed and include the 3 mandatory attachments:**

1) ethical annex (Appendix G);
2) co-funding commitment letter (Appendices D, E, F);
3) supervisor and co-supervisor CVs.

SELECTION CRITERIA

PhD projects will be selected by the PSL scientific committee, according to the following evaluation grid:

Criteria	Details	Scoring
Novelty	- New/Emerging project for the laboratory or the scientific community; - Innovative dimension by proposing original concepts, methods, or approaches that go beyond the current state of the art; - A connection with to one or more of the following axes in sustainable soft matter: T1) development of eco-responsible chemical processes, T2) building a circular economy, T3) innovative concepts for renewable energy, T4) carbon capture, storage and valorisation.	30%
3is dimension	**(1) Interdisciplinary** Research project crossing the frontiers between physics, chemistry and biology; Research project targeting a topic or an application requiring a substantial level of integration between disciplines. **(2) International** Secondment (at least 1 month mandatory) or short stays to an international partner; Project is part of an international consortium; International collaboration. **(2) Intersectoral** Direct interest in the outcome of research project from an industrial partner; Potential for innovation, including the creation of a start-up company; Short stays to a non-academic partner.	30%
Impact	For science; For society; For the lab/researcher.	25%
Mentoring quality	Quality, novelty and pertinence of the supervision, including experience and availability of the supervisor: - HdR (Certified research director) Diploma or equivalent - International academic track records - Experience as a PhD Supervisor - Management training - Availability of the supervisor: the Executive Board will make sure that the supervisor has sufficient time available for the project considering other scientific and supervision commitments already made.	15%

Approval by the PSL Scientific Committee does not guarantee funding, as final allocation depends on the candidates' choices: **up to 30 PhD proposals will be published** on the PRISM website, whereas **only 15 candidates will be selected** and asked to rank their preferred projects.

APPENDICES

APPENDIX A - PRISM SCIENTIFIC PROGRAMM AND DESCRIPTION OF 4 TOPICS

Human activities have led to global warming, plastic pollution, risks to freshwater supply and loss of biodiversity. Meeting the challenges of the Anthropocene era requires a global, international and multidisciplinary strategy. Of course, we all need to reduce our ecological footprint and adopt more sustainable behaviours. However, we also need to develop new renewable energy sources, efficient low-temperature and low-pressure processes, and encourage the transition to a circular economy where resources are reused, recycled and waste reduced (3R principles). This is the only way to save our planet. As the recent IPCC report points out, to deal with irreducible emissions (agriculture, transport, industry), the elimination from the atmosphere by human intervention of 2 to 20 Gt of CO2 per year is another crucial challenge facing us.

PRISM offers to train a new generation of interdisciplinary scientists and innovators to develop new concepts for the future as part of the environmental transition. Our goal is not to improve existing processes but rather to be disruptive and tackle major bottlenecks (Capture CO2 valorisation storage, fully renewable energy, harvest east and industrial processes, plastic upcycling, bioconversion) in new ways. We aim to work on breakthrough processes to prepare for the economy of 20 years from now.
The main objective and originality of PRISM is to focus on disruptive solutions involving soft matter and microfluidics to design tomorrow's low pressure, low temperature industrial processes for the environmental transition.

PRISM will focus on four general topics:

T1) Development of eco-responsible chemical processes

In order to develop sustainable processes, we need to introduce tools for catalysing chemical reactions at low temperature and low pressure. We will develop novel catalytic processes based on green chemistry principles, on maximising atoms and on steps economy, solvent-free reactions, coacervates, waste minimization, one-pot catalysis, enantioselective synthesis, organometallic compounds that mimic natural enzymes. We will use microfluidic approaches to sort, discover and optimise new enzyme strains or new micro-organisms strains at micro- and nanofluidic scales. Microfluidics, enables a test throughput 1000 times higher than robotics, making these approaches possible for the first time, and enables natural diversity to be analysed with unrivalled precision. Targeted applications include biomass processing and CO2 recovery. Flow chemistry coupled with various physical stimuli (plasma, microwave, light) and on-line production monitoring (in situ modelling for feedback on process parameters) will enable us to rethink the chemical synthesis of tomorrow, reducing its energy and environmental impact while increasing yields.

Novelty: Use of soft matter concepts to create zones of concentrated reagents (coacervates) or to increase the contact surfaces between phases of reagents (surfactants, polymers, but also, in a very original way, microorganisms17), development of flow chemistry techniques for the synthesis of polymers and solid particles, implementation of different activation sources for catalysis of continuous processes.

T2) Building a circular economy

We will first address the polymer question. The challenge today is to place polymers at the heart of a new circular economy, implying significantly improved collection, degradation and recycling channels. This requires the development of recycling processes able to retrieve the basic valuable chemicals or building blocks, which can be upcycled in the petrochemical industry. PSL seeks to have a transformative impact on the question by addressing the following issues: (i) selecting new enzymes for polymer degradation, (ii) developing faster depolymerization techniques using enzymatic catalysis, this involves making the polymer amorphous and (iii) improving the mechanical properties of thermoplastics while maintaining their recyclability i.e. developing vitrimers18.

Novelty: Use of directed evolution to produce efficient enzymes for polymer upcycling19, find strategies to make the polymers to be recycled amorphous to enhance the enzyme activity, use of foams to collect metallic ions. Chemically modify commodity polymers to recycle mixed wastes.

T3) Innovative concepts for renewable energy

Blue energy (BE) refers to the osmotic energy released when solutions of different salinity are combined, and it is possible to recover 2.5% of the world's electricity consumption from estuaries. Reverse electrodialysis, the most promising technology for BE, recovers the Donnan potential that appears across selective ion-exchange membranes placed between solutions of different salinities [LPS ENS]20. Under the osmotic effect, ions migrate from concentrated to dilute solutions. As the membranes are selective, an ionic flow is established, which is then converted into an electric current. Currently, the efficiency of these processes is limited by the cost of highly selective membranes and by membrane polarisation. Membrane polarisation is caused by the constant flow of ions through the membrane which accumulate or disappear on its two surfaces21. This reduces the difference in concentration of the various salts between its two surfaces and thus the efficiency of the process. PRISM will address these two limitations. Mechanical vibrations are a second source of energy that surrounds us and is not yet exploited. We will develop new electrostrictive or triboelectric flexible and recyclable materials to recover energy from these vibrations or from ocean waves.22 Finally we will explore the use of microalgae for biofuel production as an alternative to conventional biofuel crops. Despite the potential for high lipid production, the economic viability of algae-based biofuels is hampered by high production costs, particularly during harvesting. We will propose a high-throughput approach for understanding [IBENS ENS Paris PSL]23 and optimising algae growth conditions [PMMH ESPCI Paris PSL] and selection, and develop efficient harvesting methods.

Novelty: Development of new low cost, fluorine free, highly selective membranes based on cellulose sulfonated poly (ether ether ketone) or 2D materials24, Mitigating the membrane polarisation (auto-induced electro-osmosis flow on the membrane to mix the boundary layer close to the membrane, segmentation of the electrodes and the membrane to allow the ions to go rapidly in the volume without building a boundary layer). Optimising wave energy recovery using fluid/structure interactions, developing stretchable flexible materials with simultaneous electrical and ionic conductivity using a double network strategy. Studying the effect of flow, shear strain, confining constraints, light exposure cycles on the metabolisms of the algae. Use of algae concentration modifications caused by flow and ultrasound to concentrate algae suspension.

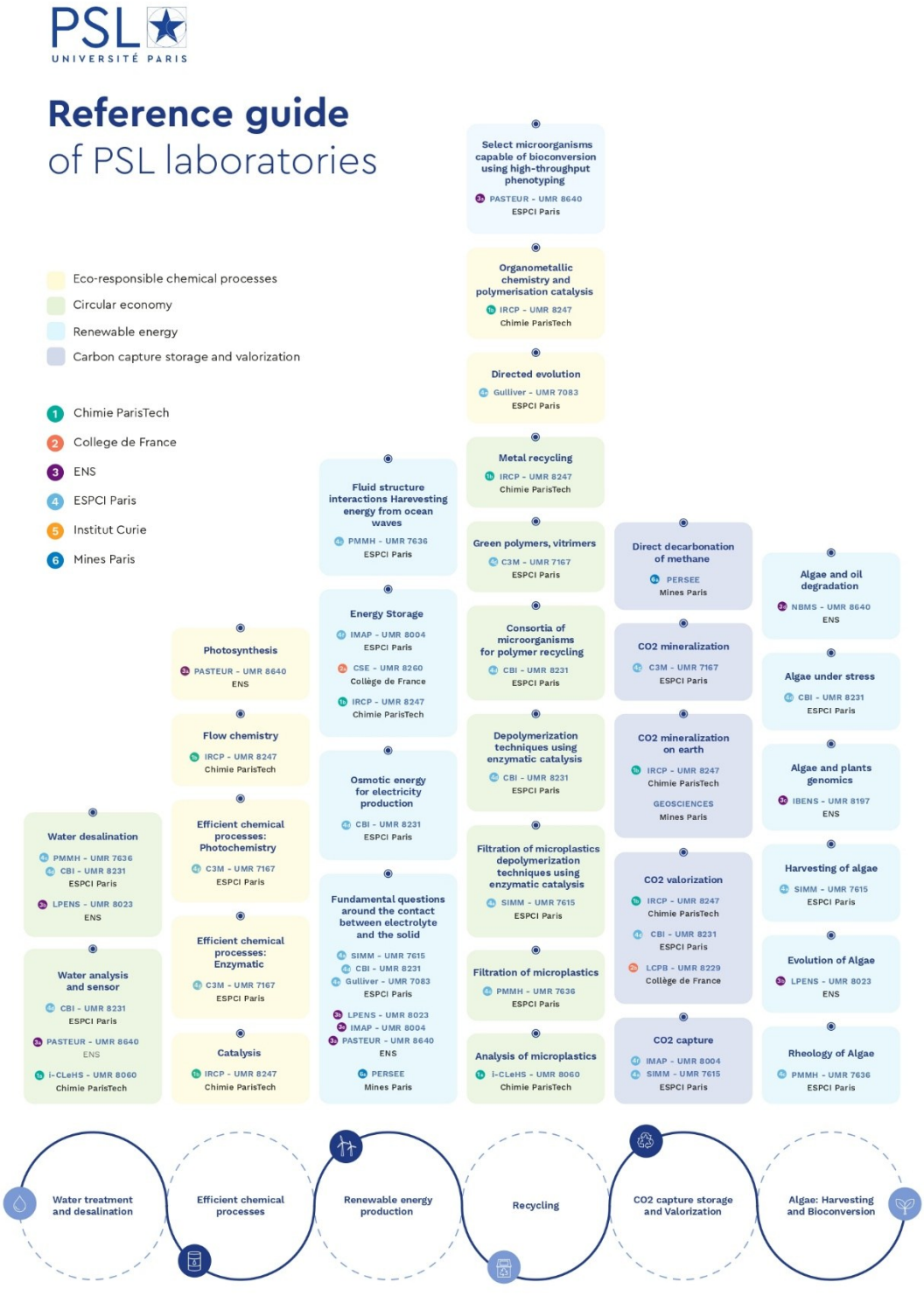
T4) Carbon capture storage and valorisation, application to building materials

Carbon capture and sequestration are needed to limit global warming to 1.5 or 2°C. As some emissions are irreducible (agriculture, transport, industry), the elimination from the atmosphere by human intervention (direct air capture, DAC) of 2 to 20 gigatons of CO2/year is a crucial issue. DAC should be distinguished from carbon capture utilisation and storage CCUS, where CO2 concentrations are much higher and energy requirements lower. To address DAC, we aim to (i) develop MOFs [IMAP ENS-ESPCI Paris PSL]25, use electrochemical techniques [CBI], (ii) develop new activation processes to convert CO2 into small molecules [IRCP Chimie Paris PSL, LCPB Collège de France]26 and (iii) study the conditions for CO2 mineralisation [Mines de Paris PSL]27 in underground rock thanks to high throughput techniques. Injecting CO2 into building materials will be a major focus of the project.

Novelty: Use of new catalysts based on copper, use of plasma activation to convert CO2, optimisation of the efficiency of DAC based on the electrochemical extraction of CO2 from the oceans by recovering osmotic energy from the process's acidic and basic effluents. Introduce CO2 into building materials to lower the cement footprint.

APPENDIX B - PSL JOINT RESEARCH UNITS

Reference guide of PSL Laboratories focused on sustainable matter: The list of Joint Research Units is indicative and not exhaustive. Laboratories not listed may be eligible if they belong to a PSL establishment and are active in one of the four PRISM research themes.



APPENDIX C - SPECIAL RULES FOR THE ESPCI LABS

If your lab is managed by the ESPCI, please upload the complementary instructions via this link:

https://dl.espci.fr/ticket/b92179471909b0e2151b48c977d61176

APPENDIX D - STANDARD TEMPLATE OF COMMITMENT LETTER FOR INDUSTRIAL FUNDING

Please upload the **standard** template of commitment letter for industrial co-funding via this link:

https://dl.espci.fr/ticket/c39c69e33517415bec648251352ac1f8

APPENDIX E - MODEL OF COMMITMENT LETTER FOR PUBLIC FUNDING

Please upload the model of commitment letter for public co-funding via this link:

https://dl.espci.fr/ticket/e7b474f0e4d8a07b95c5062d9f68cdb8

APPENDIX F - MODEL OF COMMITMENT LETTER FOR LAB OWN RESOURCES

Please upload the model of commitment letter for laboratory co-funding via this link:

https://dl.espci.fr/ticket/c7859aa02324856d906044232d843a2d

APPENDIX G – ETHICAL ANNEX

Please upload the ethical annex of the project via this link:

https://dl.espci.fr/ticket/7d1d488f56ca63ef06cf6d379849c1b3