

## Postdoc: Creation of functional microspheres/CBI-LCMD

### ESPCI Paris PSL

ESPCI Paris PSL is a major institution of higher education (a French "Grande École d'ingénieurs"), an internationally renowned research centre (6 Nobel Prizes), and a fertile ground for innovation, with several start-ups founded each year. ESPCI is a highly multidisciplinary environment with teaching and research in physics, chemistry and biology.

### Context

Microfluidic technology allowed for revisiting emulsification processes. This technology now offers an efficient tool for producing calibrated emulsion droplets. Additionally, the ability to encapsulate various components, add serial process steps, parallelize production and droplet operations has opened up a new avenue for creating functional microspheres. These microspheres are used in particular in applications in the field of life sciences where precise control of their characteristics, such as size or surface properties, is required. The laboratory has developed new microfluidic systems allowing the industrialization of the process. The valuation of this work is now in the hands of iSpheres, a spin-off of ESPCI.

### Objectives, profile and missions

As part of the research work carried out in collaboration with the company iSpheres, ESPCI is recruiting a post-doctoral fellow over a period of 12 months with experience in the chemistry of materials, in particular of polymers, and in the physicochemistry of colloids and surface engineering. The main objective is to develop new microspheres with mechanical and physicochemical properties suitable for applications in the field of life sciences, and in particular to make possible the grafting of proteins such as antibodies for example.

The candidate will have to develop and adapt microsphere synthesis routes by different approaches, such as polymerization and in particular by sol-gel process. It will also be responsible for modifying surface properties by adding functional groups. The candidate will be responsible for optimizing the synthesis protocols in connection with the microfluidic emulsification process and their industrialization. It will also characterize the physical and chemical properties of the microspheres, both by volume and by surface.

Rigorous and with good communication skills, the candidate will have to adapt to teamwork involving staff from the laboratory, the company, and subcontractors.

Training in polymer chemistry and colloid physicochemistry is required. Skills in particle synthesis, surface functionalization and knowledge of biodegradable polymers are also desired.

At the end of the 12-month temporary contract (CDD), a permanent job (CDI) may be offered to the candidate within the company iSpheres.

### Recruitment

Start: as soon as possible

Duration: 12 months

Salary: The level of remuneration depends on the experience and motivation of the candidate.

Contact: Send a CV with referents and a cover letter to Nicolas Bremond: [nicolas.bremond@espci.fr](mailto:nicolas.bremond@espci.fr)