

Postdoc offer

On chip filtration by hydrogels of varying permeability and selectivity

Hydrogels are networks of polymer chains in water, of mesh size of the order of a few nanometers, in which the polymer molecules may be covalently or physically bound. This peculiar structure, combined with a **hydrophilic** character, allows for the utilization of hydrogels in **filtration applications** for water treatment. However usual hydrogels have a very **low water permeability** because of their tight network structure.

In our group we have developed a large range of mechanically resistant **hydrogels with permeabilities varying over three orders of magnitude** by adding free polymer chains of varying molecular mass and concentration in a hydrogel matrix composed of PEGDA (PEG diacrylate).

The goal of the postdoc is to **incorporate these hydrogels into microfluidic devices** that will allow the on chip measurement of their permeability and selectivity. Confocal microscopy will be used to observe the structure of these hydrogels using fluorescent polymers. We will then extend our approach to **polymers of varying charge and hydrophobicity to control their selectivity to varying organic molecules**. Once this platform has been set up several perspectives can be foreseen such as the on chip separation of organic or biomolecules.

The postdoctoral fellow will be based at ESPCI in the **Lab for Soft Matter Science and Engineering and will have the opportunity to strongly interact with IPGG, Institut Pierre Gilles de Gennes for microfluidics**, where the microfluidic experiments will be performed.

A good experience in microfluidics is required and a taste for soft matter science is a must. We are offering a 12 month contract, financed by Institut Carnot IPGG for Microfluidics, with a possibility of extension for six more months.

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