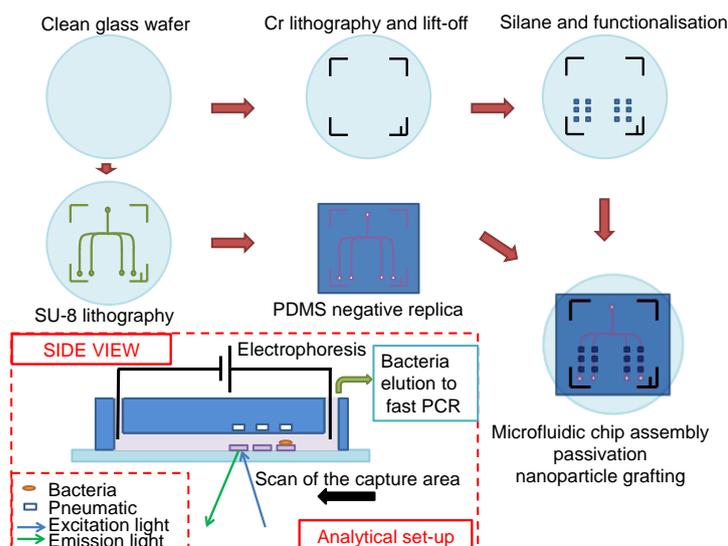


**We propose a PhD project to DEVELOP MICROFLUIDIC DEVICES TO DETECT SEPSIS BY NANOLUMINESCENCE.**

**Join the group !**

**Contact : rachel.meallet-renault@u-psud.fr - 01 69 15 31 28**

A first generation of bacteria-sensitive (but non-specific) nanoparticles has been developed and can rapidly detect (typically 2-6 h, depending on the initial concentration) low bacterial growth (<1000 CFU / ml) [Biosensors and Bioelectronics, 2016, 75, 320]. These nanoparticles are not only more sensitive than the molecular sensors currently in use, but also more sensitive and reliable than conventional optical density measurements. They allow continuous and real-time monitoring of bacterial growth over long periods of time and on small volumes and can thus be used for high throughput applications such as screening for the presence of antibiotic-resistant strains. New NPs selective for certain strains have to be developed and characterized. First-generation fluidic microdevices shall be designed. This thesis project focuses on the development of highly sensitive devices thanks to nano-luminescent objects.



**This project gathers 4 academic partners and 1 company with complementary expertise.**

**Rachel Méallet-Renault** (ISMO CNRS UMR8214, Univ. Paris Sud) is a physical-chemist specialized in fluorescence and will be supervising the PhD. She has experience in project management (LabeX, DIM ...) and will provide the necessary experience to coordinate this multidisciplinary project. She will oversee surface grafting, surface calibration, fluorescence and microscopy imaging investigations (without and with bacteria). Farah Savina (research engineer, ISMO) will contribute to surfaces characterizations. **Antoine Pallandre** (co-supervisor, LCP CNRS UMR8000, Univ. Paris Sud) will be in charge of the microfluidic devices and sample preparation parts. He will coach the PhD candidate to design and fabricate (within the RENATECH network) microfluidic systems, in connection with the Elvysys Company (potential collaborator).

**Gilles Clavier** (PPSM CNRS UMR8531, ENS Paris Saclay) will bring his expertise in the synthesis and functionalization of nanoparticles. **Bianca Sclavi** (LBPA CNRS UMR8113, ENS Paris Saclay) will give advice to design and test biosensors for pathogenic bacteria.