Ph.D. scholarship (2016-2019) at *Ecole normale supérieure de Rennes/CNRS*

The SATIE laboratory at ENS Rennes (Rennes, France; member of the newly created *Université Bretagne Loire*) will have a **funded 3-year Ph.D. scholarship** starting October 2016. We are looking for candidates with a Master's degree in **applied physics, electrical engineering** or **mechanical engineering** and affinity for **microfluidics and bionanotechnologies**. Candidates with a background in **analytical** or **physical chemistry** and experience in **microfluidics** and/or **nanotechnology** are also encouraged to apply.

The subject of the Ph.D. thesis is in the domains of **(electro)microfluidics** and **(bio)nanotechnology**. The project will work towards developing methods for extracting information on the chemical and biological state of **microfluidic samples** (e.g. the presence of **biomarkers**) by analyzing the behaviour of individual metallic **nanoparticles** injected into the sample. These particles are characterised by their stochastic microscopic movements, their optical signal and their response to the microscale **electric field**.

Our group has recently demonstrated the observation of individual particles in microsystems using dark-field microscopic methods (*Analyst* **2013**, *138*, 583), chemical control of the optical response of gold nanoparticles (*Nanoscale* **2016**, *8*, 6555). Also, we have a microfluidic device architecture that successfully manipulates nanoparticles by applying an alternating electric potential to the integrated microelectrodes (*IEEE J. Sel. Top. Quant. Electron.* **2014**, *20*, 102). These developments provide a useful starting point for the Ph.D. project.

The Ph.D. candidate should have skills in scientific instrumentation, data acquisition and programming, as well as a capability to design and set up experiments using standard lab electronics and basic optics. Prior practical experiences with microfabrication ("clean room"), microfluidics and/or (bio)analytical solution chemistry will be considered a plus, as well as experience with scientific Python, Arduino, Micro-Manager and other open-source technologies. Good command of the English language, in particular scientific reading and writing is a requirement. Knowledge of French is a plus.

Interested candidates are warmly encouraged to contact Dr Martinus WERTS (martinus.werts@ens-rennes.fr; http://perso.ens-rennes.fr/~mwerts) who will provide further information on the project, the laboratory, the procedure for applying, and any other questions you may (or may not) have.

Pour des renseignements en français par rapport à cette offre de thèse vous pouvez également contacter Martinus WERTS (martinus.werts@ens-rennes.fr).