Title: BioMicroDevice research group at FEMTO-ST Institute: from fundamental to applied sciences, from laboratory bench to patients.

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Abstract

Current research activities of the BioMicroDevice (BMD) group at the FEMTO-ST Institute have one common goal: the detection, characterization and quantification of molecules or biological cells in more or less complex fluids or samples for a better understanding of the environment, biological or agri-food mechanisms in order to translate them into devices usable in real situations. Activities are centered on what follows.

- Detection and characterization of biological molecules and biochemical reaction activation by means of acoustic waves in acousto fluidic devices.
- Study of living cells or molecules and their interaction with their environment by means of characterization platforms using SPR, SPRi, AFM, mass spectroscopy and flow cytometry.
- Integration of innovative and active materials in micro devices and development of specific bio-interfaces.
- Microfluidics for the development of MEMS in liquid environment.
- Biomedical optics for biological qualification and medical instrumentation.

In order to achieve these goals, the BMD group exploits multidisciplinary knowledge: biochemistry, engineering sciences and micro technology in our cleanroom facility.
Our strong collaboration with the Clinical Investigation Center (CIC1431) of Besançon University Hospital in the development of innovative technologies for health show how the group is deeply involved in the clinical and biological world for the diagnosis and pathology follow-up of patients.

Biographies

Bruno Wacogne is a CNRS Research Director at the FEMTO-ST Institute (UMR CNRS 6174) where he is leading the transversal axis Biom'@x concerning Sciences and Technologies for a Translational Medicine. He is also the technological coordinator of the Clinical Investigation Center of Besançon University hospital (INSERM CIC1431) where he is leading the Microsystems and Biological Qualification team. His research interests are micro technologies, optics, translational research, biological qualification and immune-combined medical devices.
Thérèse Leblois is Professor in electronics and microsystems at the Franche-Comté University where she leads the BioMicroDevice team at FEMTO-ST Institute. Originally, she worked on piezoelectricity and piezoelectric resonators. Since 2007 she oriented her activity to the conception of micro devices for health science and agri-food. More particularly, she develops GaAs acousto fluidic microsystems including specific bio-interfaces for molecular detection and quantification.