HEALTH AND ENVIRONMENT TECHNOLOGIES, MEDICAL DEVICES

According to the World Health Organization, medical device (MD) means any instrument, apparatus, machine, implant, reagent for in vitro use, software, material or other similar article, intended to be used for human beings including (i) diagnosis, prevention, monitoring, treatment or alleviation of disease or handicap and (ii) study, replacement or modification of an anatomic structure/function or of a physiological process or state.

The research in MD is also driven by the worldwide context of health that considers not only medical aspects but also societal ones including demographic explosion, environment, food and water quality and population ageing. Thereby, medical devices appear as crucial technological bricks to ensure the quality of life of any human on the planet in the next future. The domain of MD is fueled by a broad range of technological innovations from chemistry and materials to biology, from microfluidics to electronics, optics and photonics and from measurements to data processing and Artificial Intelligence. Moreover, these technological approaches have to be declined here in strong coherence with the doctors and patients needs, medical staff usages and reglementary processes.

The aforementioned diversity of knowledges needed to cover the overall MD fields of research places CEA Tech as major actor for the development and the deployment of these technologies owing to the multiplicity of competences available, its culture in transversal research approaches and its capacity to manage researches from technological concept to clinical demonstrators. Furthermore, some of the developed technologies can be applied in the more general context of health for environment monitoring or food and water quality.

WHY A PHD RELATED TO HEALTH & ENVIRONMENT TECHNOLOGIES, MEDICAL DEVICES AT CEA TECH?

CEA Tech offers unique position in the French and European MedTech research owing to its interdisciplinary skills and ability to work in transversal programs.

PhD students will find at CEA Tech medical device technology, chemistry, biology and clinical platforms dedicated to the development of medical devices up to their application in preclinical and/or clinical testing (Clinatec). Moreover, away from these specific tools dedicated to the design of MDs, CEA Tech offers one of the most important technological platform for silicon micro and nanosystem design in Europe. Thereby, CEA Tech has the ability to implement, owing to these tools, new emerging technologies at the heart of advanced medical devices. Away from these technology skills, PhD students will find at CEA-Tech research teams also involved in strong relationships with recognized French and European medical and biology teams. This positioning is of the first importance to place CEA Tech developments in the usage and needs issued from the medical community.