

**Title of the workshop linked to the ESSCIRC 2010 conference (www.esscirc2010.org):
Low power electronics for medical applications in the frame of the FP7 ICT European project ULTRAsponder**

Date: Friday 17th September 2010, from 9:00 AM to 4:45 PM, Sevilla, Spain.



Organiser

Dr. Catherine Dehollain: coordinator of ULTRAsponder. Web page: www.ultrasponder.org
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Summary of the workshop

The two sessions in the morning are devoted to the ULTRAsponder project thanks to six presentations. They are focused on **remote powering and communications through ultrasound**, and on **low power data acquisition and low power digital processing**. The session in the afternoon is dedicated to four presentations in the domain of **low power electronics for medical applications** performed by worldwide recognized scientists.

The FP7 ICT European Project **ULTRAsponder** aims at developing a new system with a high degree of **reliability and accuracy of the clinical data**, while providing the patients with high level of safety and user friendliness. Though the project intends to propose a general solution to several possible pathologies, such as acute diabetes, epilepsy and other debilitating neurological disorders, it focuses its efforts on one **demonstrator devoted to chronic cardiac diseases**. For this specific application, **continuous monitoring** is particularly important to follow the day and night heart activity, thus allowing to understand **how the heart reacts** to different kinds of **stresses**, to different kinds of **activities** and to different sorts of **medications**. A continuous monitoring of a patient can also give the physicians the possibility to make a **direct comparison** of the actual patient condition with a past condition (one day, one week or one month earlier). Therefore continuous monitoring is a major leap forward in the diagnosis and the treatment of **cardiac congestive heart failure (CHF)**.

ULTRAsponder aims at developing an innovative technology based on **ultrasonic telemetry techniques**, for communication between one sensor deeply implanted in the human body (**the transponder**) and a **control unit** which is used for both **wirelessly recharging** the implanted device and **transmitting the received information** to the external world. Web address: <http://www.ultrasponder.org>

Registration

The registration is mandatory by using the web page of the ESSCIRC-ESSDERC 2010 conference

Fees: This workshop is free of charge

Program of the workshop: see next page

Program of the workshop

8:45: Opening of the desk at the entrance of the room

SESSION 1: Remote powering and communications through ultrasound

9:00: Opening of the workshop, Catherine Dehollain, EPFL, RF IC group, Lausanne, Switzerland

9:10: FP7 ICT European ULTRAsponder project: In Vivo Ultrasonic Transponder System for Biomedical applications

Speaker: Catherine Dehollain, EPFL, RF IC group, Lausanne, Switzerland

9:30: Ultrasound for wireless energy transfer and communication for implanted medical devices

Speakers: Catherine Dehollain and Francesco Mazzilli, EPFL, RF IC group, Switzerland

From 10:00 to 10.30: Coffee break

10:30: Possible acoustic paths for communication and energy transfer with deeply implanted sensors using ultrasound

Speaker: Benjamin Cotte, INSERM, Unit U556, Lyon, France

SESSION 2: Low power data acquisition and low power digital processing

11:00: Data compression in medical implants

Speaker: Pal Anders Floor, Oslo University Hospital, Interventional Center, Oslo, Norway

11:30: Low-power data acquisition system for very small signals with 12-Bit-SAR-ADC

Speaker: Christof Dohmen, IMST GmbH, Kamp-Lintfort, Germany

From 12:00 to 13.30: Lunch

13:30: Low power digital processing

Speaker: Marc Morgan, CSEM, Neuchatel, Switzerland

SESSION 3: Low power electronics for medical applications

14:00: Electro magnetical fields and implanted medical devices: MRI compatibility

Speaker: Volkert Zeijlemaker, Medtronic, Bakken Research Center, Maastricht, Netherlands

14:30: Low power analog electronics for portable and autonomous applications

Speaker: Franco Maloberti, University of Pavia, Integrated Microsystem Laboratory, Italy

15:00: RF CMOS sensors for contactless health monitoring

Speaker: Domenico Zito, University College Cork and Tyndall National Institute, Cork, Ireland

From 15:30 to 16.00: Coffee break

16:00 Battery-less wireless sensors based on low power UHF RFID tags

Speaker: Ivan Rebollo, Farsens S.L., San Sebastian, Spain

16:30: Closing of the workshop: Catherine Dehollain, EPFL, RF IC group, Lausanne, Switzerland