PhD Thesis Proposal

on High-Frequency Autonomous Wireless Sensor

Deadline for submission : **May, 25th 2012**

An innovative solution for a directive and autonomous transceiver sensor based on multifunctional polymer materials (Cyclo Olefin, COC/COP)…

Aims

We propose an innovative solution for a directive and autonomous transceiver sensor based on a multifunctional polymer material (Cyclo Olefin, COC/COP) which has very good microwave and optical properties. The task is to analyse, design, manufacture and characterize the basic elements in order to obtain a final demonstrator of the proposed sensor. The objective is to gather information of an object which has the size of a shirt button located at a distance of at least 1 km or 2 km (or more). Target applications may be very different, both civilian and military. In the first approach, it can be a simple tag presence. In more advanced versions, it may be equipped with sensors, and thus able to provide additional information about its immediate environment. To achieve this objective, ie a significant range for a low footprint, we plan to use directional antennas in the millimeter frequency range. The multifunctional nature of the polymer COC/COP that we recommend, is that it will serve both to materialize antennas for the communication aspect, and lenses for energy independence. We plan indeed to "boost" the energy recovery, that could be done solar cells or thermogenerators. Due to the small size of the object and to its directive communication, this component will be very discreet.

E. Rius
Professor

Y. Quéré
Assistant Professor

A. Maalouf
Research Engineer

The Team

This project will be conducted by a team of the Lab-STICC laboratory at the University of Brest (Université de Bretagne Occidentale), consisting of five persons. It will rely on a highly specialized network of service providers in different key areas addressed by this project. This team obtained the best scored (A+) by the AERES, french evaluation agency for research and higher education organism.
(http://www.lab-sticc.fr/, http://www.univ-brest.fr/)

Context of the proposal

This proposal is closed to a submitted ANR ASTRID project. It will be financed by the Region Bretagne and the DGA.

Brest, FRANCE

Candidate profile

Eligibility : maximum age of 27 years on 1st October 2012 and Union European Student.
Scientific profile : Microwave active and passive devices, Electromagnetic simulation and modelling

Monthly salary : 1760€

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