STIMESI
Stimulation Action on MEMS and SiP

EUROPRACTICE
IC SERVICE

STIMESI Training course program

MEMSCAP: MUMPs® (Multi-User MEMS) processes

MEMSCAP
The Power of a Small World™

Polytech'Nice-Sophia
École d'ingénieurs

softMEMS

CMP

Polytech'Nice-Sophia
Sophia Antipolis, France
June 2-5, 2009

Abstract
MEMSCAP provides access to three MEMS processes, described below, via the MUMPs® MPW service.

The PolyMUMPs™ process is based upon the deposition of the following layers onto a Si substrate: a nitride isolation layer, a polysilicon ground layer, two structural polysilicon layers, two sacrificial oxide release layers, and one metal layer for electrical connection and enhanced reflectivity.

SOIMUMPs™ utilizes a three mask, silicon-on-insulator (SOI) process based upon a starting wafer consisting of layer thicknesses 10 µm or 25um, 1 µm, and 400 µm, for the silicon, oxide, and substrate, respectively. The silicon layer may be patterned and etched down to the oxide to form mechanical structures, resistors and electrical routing. In addition, the substrate can be back-etched to the oxide, enabling the construction of through-hole structures.

MetalMUMPs™ employs electroplated nickel as the primary structural and interconnect material. In addition to this, doped polysilicon layers may be used to form resistors or further mechanical structures. Electrical isolation is achieved though the deposition of silicon nitride and oxide is employed as a sacrificial layer. Trench layers may be etched into the substrate so as to achieve additional thermal and electrical isolation. Gold plating of the nickel sidewalls may be employed if low contact resistance is desired.

Topics
This training course will provide an overview to the three MUMPs® processes, highlighting their different strengths with reference to potential applications. An overview of the design kits will be presented, and design methodologies will be illustrated using hands-on tutorial exercises. A strong emphasis of the course will be on familiarizing the participants with the process design rules. In this way, tips and tricks for pushing the process will be discussed.

Format
The first half of the course will provide attendees with an overview of each of the processes, as well as an introduction to the design kits and design rules. The second half of the course will consist of hands-on design exercises using MEMS Pro from SoftMEMS for design entry and ANSYS for finite element modeling.

The PolyMUMPs tutorial sessions will make use of both parameterized and non-parameterized cells from the CaMEL library. Example devices contained within this library include: linear comb drives, micro-tongs, and wobble motors. The Metal MUMPS session will employ tutorials based upon relay-like devices, whilst the SOIMUMPs hands-on class will concentrate on optical devices

What is STIMESI ?

The goal of the STIMESI Stimulation Action is to stimulate European universities and research institutes to adopt MEMS and SiP technologies. The more experienced universities already active in MEMS design/technology will be assisted to increase their MEMS research activities and to design and fabricate more MEMS circuits and SiP components. Additionally other universities not currently active in this area will be given guidance to help them bootstrap their MEMS/SiP teaching and research activities.

Who should attend ?

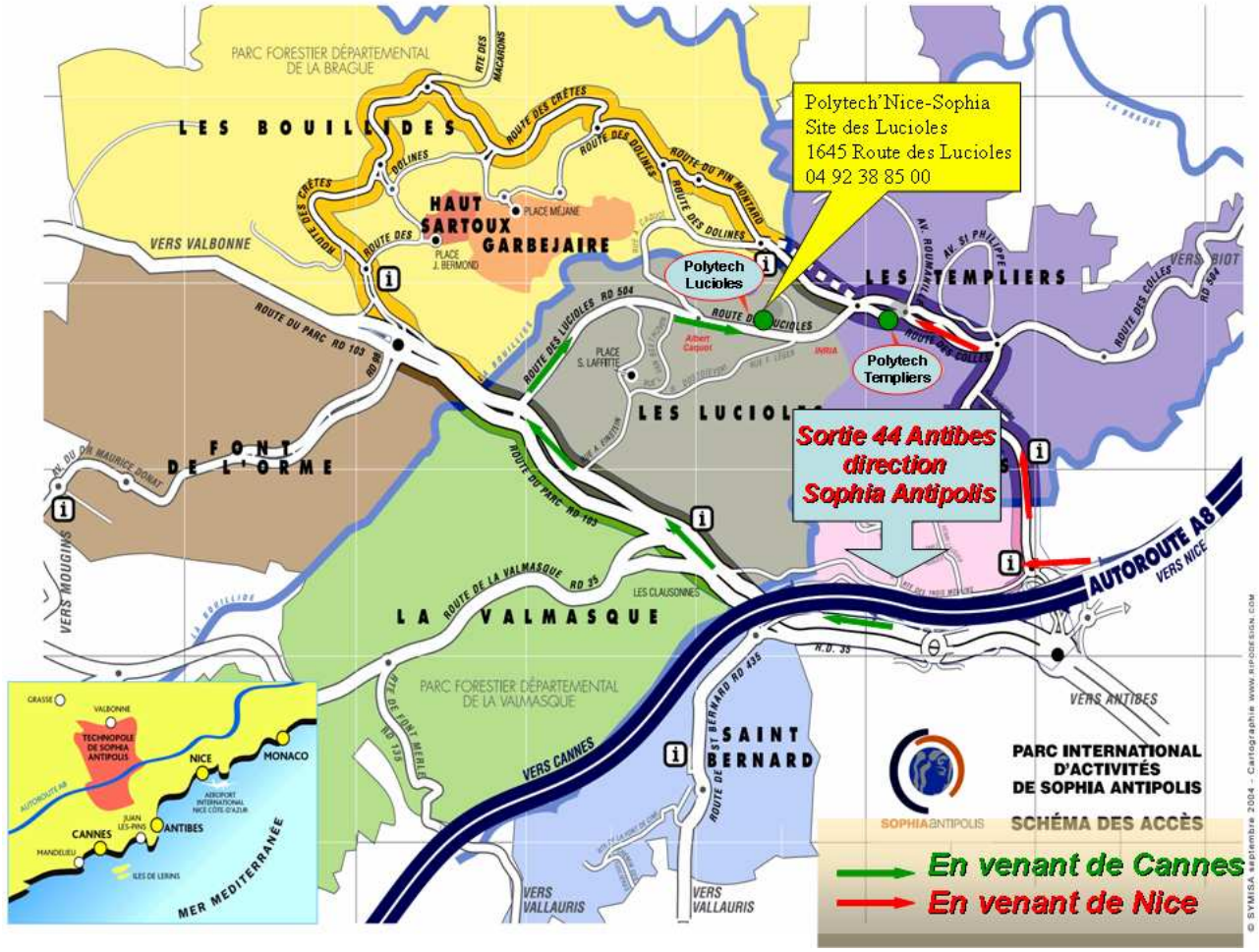
All Europractice member universities and research institutes that want to begin or strengthen their teaching and/or research activities in MEMS/SiP technologies. Also companies having interest in using MEMS in future products are invited to attend.

Registration

To register for this course, go to http://www.stimesi.rl.ac.uk/index.cfm and complete the form.

Location

Polytech'Nice-Sophia
Site des Lucioles
1645 Route des Lucioles
06410 Biot, France



Fees :

- Attendance is free for members of universities and research centers from all 25 EU countries and Norway, Iceland, Lichtenstein, Israel, Bulgaria, Croatia, Romania, Switzerland and Turkey. The course is limited to 20 students. In case the course is over-subscribed, access is limited to one participant per institute and on first-come basis
- Companies : 300 € (excl. 19,6% VAT)
- Fee includes all lectures, course notes, lunches and refreshment breaks. Hotel accommodations and meals other than lunches are not included in the course fee.
- Cancellation by a participant between 2 and 14 days before the start of the course is subject to a 200 € administration fee. A 300 € fee will be charged for cancellation within 48 hours of the start of the course or for those who do not attend.

Accommodations :
Attendees are responsible for finding their own accommodations for the course.

SoftMEMS
Bringing MEMS to the Mainstream

cnfm PACA

Université Nice SOPHIA ANTIPOLIS

arcsis CONCEPTION