## Keep this leaf folded and tick the Course 1: appropriate box according to the location of your convenience. Micro ☐ Actuators Course 2: Etching Technology Function Country Comse 3: Hands on MEMS Comse £ Packaging Course 5: CAD Tools Company Address

**FSRM** 

CH-2000 Neuchâtel

Fax +41/ 38 24 71 45

for MEMS

CAN BE

**FAXED TO:** 

MEMS (Micro Electro Mechanical Systems) are characterized by dimensions ranging from millimetres to fractions of micrometre. They integrate many functions such as sensors, electronic circuits and actuators in a small volume.

These extremly miniaturized systems are manufactured in a highly parallel manner (batch process) and can therefore reduce not only the size, but also the price of the product they

MEMS areas of application:

Measuring and process control systems need an ever increasing number of microsystems to achieve a higher rate of automation. Medical instrumentation, watch and aerospace industry are interested in the miniaturization microsystems can offer. The low manufacturing cost resulting from batch processes is of great importance for the automobile and consumer industry.

### COMETT

COMETT (COMmunity programme for Education and Training in Technology) started in 1987 to promote cooperation between universities and industry regarding training in

Comett activities are carried out by a network of 205 sectoral and regional UETPs University Enterprise Training Partnerships). These include courses, students and personnel



The Swiss Foundation for Research in Microtechnology (FSRM) created the project UETP-MEMS in 1992 as a sectoral UETP for training in Micro Electro Mechanical Systems. The general purpose of UETP-MEMS is to increase the application of microsystems in the industry by developing short, specific courses on the subject, and by supporting personnel exchanges between industry and universities, generally between users and suppliers of MEMS.

For more information about the possibilities offered by UETP-MEMS contact: Philippe Fischer, FSRM, CH-2000 Neuchâtel, Tel:++41 38 24 52 00, Fax: ++41 38 24 7145.

#### **COURSE PROGRAMME 1993:**

The courses offered in the 1993 programme concern specific topics of MEMS. They are short, application oriented and aimed at R&D engineers and executives. They have been prepared during the second half of 1992 by following partners of UETP-MEMS:

CEM GmbH (D), Cetehor (F), ETH Zürich, Physical Electronic Laboratory (CH), Fondation Suisse pour la Recherche en Microtechnique (CH), Hahn-Schickard-Institut für Mikround Informationstechnik (D), HMT Microelectronic AG (CH), LPMO CNRS (F), Neu-Technikum Buchs (CH), Sextant Avionique (F), STS Sensor Technik Sirnach (CH), Université de Besançon, Laboratoire de mécanique (F), Université de Neuchâtel, Institut de Microtechnique (CH), University of Twente, MESA Institute (NL)

#### Course registration:

Please tick the appropriate boxes and fax or send the registration form to UETP-MEMS at least 20 days before the first course you register for.

We will confirm your registration by sending you an information package that includes accommodation and the exact location of the course(s).

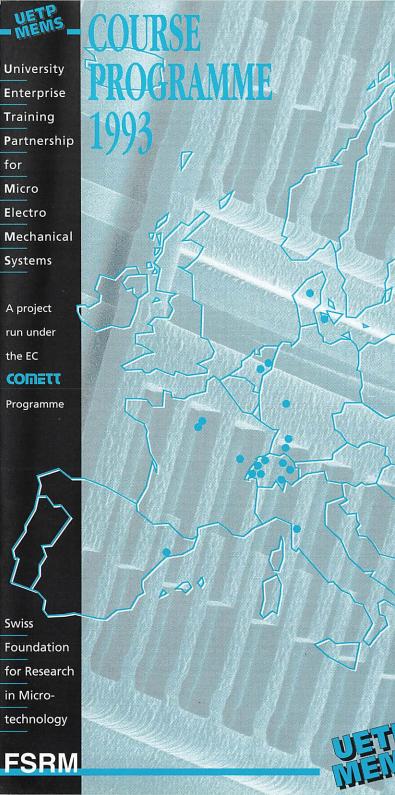


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**FSRM** 

# OGRAMME 1993

#### l: Micro Actuators

coumps, movable mirrors and switches serve as guideline through the course good comparison of different actuating principles, their characteristics, perand limitations, as well as the fabrication technology. Emphasis will be placed scaling rules leading to the micro-world. New trends in the domain of s and micromanipulators will also be presented.

lays. Fee: 600 ecus.

#### 2: Etching Technology

ery important for micro mechanical devices. The course shows the various ed. It points out when and why dry etching is preferred to wet etching, od needs what equipment and the kind of structures and surface quality tain. The course also emphasizes surface micromachining, also called yer method.

lays. Fee: 600 ecus.

#### 3: Hands on MEMS

ht after the Etching Technology course, it gives R&D engineers and he possibility to work with the equipment in a clean room and get a al idea of MEMS technology. All participants can take a self made tor home.

participants is limited to 10.

days. Fee: 1200 ecus.

#### 4: Packaging

s the most difficult issue in MEMS technology. The techniques used differ electronics packaging as sensors and actuators have to be in touch with the it. There is little expertise in the domain and the preparation of the course call on mostly industrial know how. Packaging technique does not only the device but also on the application. Medical, industrial, aircraft and examples are covered in the course.

days. Fee: 600 ecus.

#### 5: CAD Tools for MEMS

pols for layout design, process simulation and device simulation ed. Emphasis is laid on the interpretation and optimization of simulation desearch work undertaken to provide links between all levels of are presented. Exercises on workstations allow the participants to use ly available tools for the simulation of simple micromachined structures.

lays. Fee: 1200 ecus.

	Dates and locations	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	Ann	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER		
CH NL F D	NEUCHÂTEL TWENTE BESANÇON VS-VILLINGEN PISA		17/18	10/11		<sup>26</sup> ⁄ <sub>27</sub>				1/2	<sup>19</sup> /20			J	15 ev
CH NL F D	NEUCHÂTEL TWENTE BESANÇON VS-VILLINGEN			8/9 29/30			14/15				4/5				
CH NL F D	NEUCHÂTEL TWENTE BESANÇON VS-VILLINGEN			10/12 31/	2		<sup>16</sup> / <sub>18</sub>				6/8				P
CH NL F D	ZÜRICH TWENTE BESANÇON DRESDEN				20/22	11/12	22/23				26/27				
CH NL F D	ZÜRICH TWENTE BESANÇON VS-VILLINGEN			-		4/6	22/24				5/7	9/11			



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