ADVANCED PROGRAM

MICRO SYSTEM Technologies 94

4th International Conference and Exhibition on Micro Electro, Opto, Mechanical Systems and Components

With the support of the Senate of the State Berlin, Department for Technology and Economics.

Sponsors:
IEEE Institute of Electrical and Electronics Engineers

MSTA World Micro Systems Technology Association

ICC Berlin
Oct. 19 - 21, 1994

THE CONFERENCE

The micro system technologies, as well as the combination of micro system technologies and system integration technologies, will be of high importance for the economic development in the next years.
Development and production of miniaturized systems for various areas of application such as information, telecommunication, medical, biomedical, biotechnological, analytical, automotive, and environmental technologies demand close interdisciplinary cooperation between system industry, component manufacturers and research centers. For many reasons - such as miniaturization, low power consumption, new functions like biosensors for chemicals' detection, higher complexity and lower production costs - advanced applications require completely new strategies to integrate microelectronics with various non-electronic functions.

It is of highest priority in the development of new products to successfully and effectively combine and apply knowledge, experience, and the capabilities of specialists from a wide area of subjects. Companies accomplishing these requirements will enjoy long-term economic success and will be able to survive on the international market.

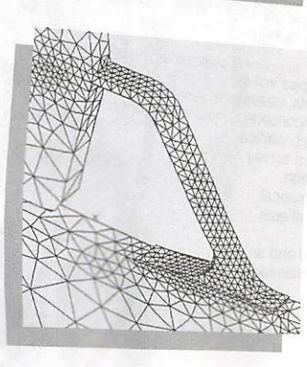
MICRO SYSTEM Technologies 94 offers you the occasion to present and discuss recent results in micro system technologies with international representatives from academia and industry. Your expertise is highly welcome and we would be pleased to welcome you in October in Berlin!

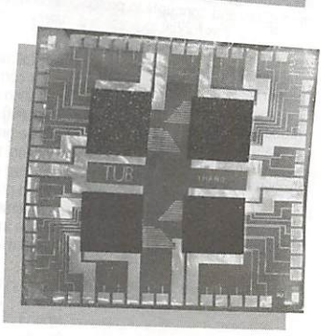
THE EXHIBITION

The exhibition MICRO SYSTEM Technologies is concurrently held to the conference and offers a unique possibility to meet the opinion-leaders in micro system technologies as well as the decision-makers for future investments.

With its comprehensive offerings, the 4th International Exhibition on Micro System Technologies to be held October 19-21, 1994, is the ideal forum to display recent developments from industry and research centers. Micro system technologies are playing a key role in all production fields.

Exhibiting at MICRO SYSTEM Technologies 94 will underline your competence in this field.





SESSIONS

Friday, Oct. 21, 1994

Plenary Session
8.30h-10.00h
Chairmen: Kiyoshi Takahashi, Tokyo Institute of Technology, Tokyo, Japan;
Anton Heuberger, Fraunhofer-Institut für Siliziumtechnologie, Berlin, Germany

8.30h **Recent Advances in Multichip Packaging (INVITED TALK)**
Rao R. Tummala, Georgia Institute of Technology, Atlanta, Georgia, USA

9.15h **Development of Integrated Sensors, Actuators and Microsystems for Automotive Application (INVITED TALK -Tentative)**
N.N, Motorola, Tempe, Arizona, USA

10.00h - 10.30h COFFEE-BREAK

Session 9
System Design 10.30h - 12.30h
Chairmen: Werner John, CADLAB, Paderborn, Germany (tentative!)
A. Tucciarone, Università di Roma, Rome, Italy

10.30h **Application Specific Integrated Systems**
B. Folkmer et. al., Fraunhofer-Institute for Solid State Technology, Munich, Germany

10.50h **A Flexible Diagnosis System for Testing of Networked Microsystems**
Michael Kranz, Forschungszentrum Informatik, Karlsruhe, Germany

11.10h **Microsystem Fault Simulation - Aspects and Requirements,** Wolfgang Vermeiren, Bernd Straube, Günter Elst, Fraunhofer-Institut für Integrierte Schaltungen, Erlangen, EAS Dresden, Germany

.30h **Simulation of Cross Coupled Effects in Physical Sensors,** Stefan Schulte, Siemens AG, Erlangen, Germany

50h **Component Table Models for Analog System Simulation,** B. Klaassen, K.L. Paap; GMD-SET, St. Augustin, Germany

h **System Level Specification and Simulation for Microsystem Design in the METEOR Project**
Jürgen Bortolazzi, Forschungszentrum Informatik, Karlsruhe , Germany

Session 10
Materials and Technologies (III) 10.30h - 12.30h
Chairmen: Jean-Pierre Lazzari, SILMAG, Grenoble, France;
Anton Heuberger, Fraunhofer-Institut für Siliziumtechnologie, Berlin, Germany

10.30h **ORMOCER®s, Inorganic-Organic Polymer Materials for Application in Micro System Technologies (INVITED TALK)**
Michael Popall, Fraunhofer-Institut für Silikatforschung, Würzburg, Germany

11.10h **Replication of Waveguide Elements Using ORMOCER® Material**
Peter Dannberg, Fraunhofer-Einrichtung für Angewandte Optik & Feinmechanik, Jena, Germany

11.30h **a-SiC Films: Deposition and Application in Silicon Micromachining**
U. Schaber et al., Fraunhofer-Institute for Solid State Technology, Munich, Germany

11.50h **Materials Development for Thin Film Actuators**
Eckhard Quandt, Institute of Materials Research I, Kernforschungszentrum Karlsruhe, Germany

12.10h **Monolithic Bridge-on-Diaphragm Microstructure for Sensor Applications**
A. Schumacher et al., Institut für Mikro- und Informationstechnik, Hahn-Schickard-Gesellschaft für angewandte Forschung e.V., Villingen-Schwenningen, Germany

Session 11
Microsystem Application 10.30h - 12.10h
Chairmen: Richard Muller, University of California at Berkeley, CA, USA;
Helmut Seidel, DASA AG, Munich, Germany

10.30h **Micromechanical Elements for Detection of Molecules and Molecular Design**
Michael Köhler, Institute of Physical High Technologies, Jena, Germany

10.50h **Mechanically Processed Microstructures Used to Establish an In Vitro Tissue Model**
K. F. Weibezahn, Institut für Toxikologie, Kernforschungszentrum Karlsruhe GmbH, Germany

11.10h **Bone Implant Relative Displacement System**
V.L. Spiering, MESA Institute, University of Twente, Enschede, Netherlands

11.30h **Evaluation of Microturbine Prototypes for Application in Eye Surgery**
Derek Mathieson, Dpt. of Computing and Electrical Engineering, Heriot Watt University, Edinburgh, UK

11.50h **LIGA-Fabricated Microtesting System for Measurement of Young's Modulus of Unilaterally Clamped Microbeams**
Patrick Ruther, Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Session 12
Component Design 10.30h - 12.30h
Chairmen: Felix Rudolf, CSEM S.A., Neuchâtel, Switzerland;
E. Voges, Universität Dortmund, Germany (tentative!)

10.30h **Thermodynamic and Fluid Dynamic Simulation of Micromechanical Manufactured Bubble-Jet Printheads**
Alfred Zollner, Bernhard Hochwind, Institut für Feingerätebau, Technische Universität München, Germany

10.50h **Design of an On-Chip Heater for Temperatures up to 450°C Based on Finite Element Analysis for Catalytic Chemical Sensors**
C. Scheibe, Technische Universität Berlin, Berlin, Germany

11.10h **Design and Simulation of Thermooptical Modulators and Switches**
Christoph Wächter, Fraunhofer-Einrichtung für Angewandte Optik und Feinmechanik, Jena, Germany

11.30h **Optimization of Components with Respect to Mechanic/Dynamic Demands for Micromechanical Purposes**
Helmut Detter, Institut für Feinwerktechnik, Technische Universität Wien, Austria

11.50h **Optimization of the Shape of Piezoelectric Microstructures**
Norbert Schwesinger, Fakultät für Maschinenbau, Technische Universität Ilmenau, Ilmenau, Germany

12.10h **3D Optimization of Average Torque of Electrostatic Micromotors**
Ronnie Belmans, KU Leuven, Leuven Heverlee, Belgium

Poster No. 8 Electroless NiAu - A PC-Board Metallization Finish Compatible with Ultrasonic and Thermosonic Wire-...ing and Soldering ...d, Hewlett

Poster No. 16 Molding of LIGA Microstructures from Polyvinylidene Fluoride
R. Ruprecht et al., Institut für Mikrostrukturtechnik, Kernforschungszentrum Karlsruhe, Germany

17 Benzocyclobutene Poly-... Optical Materials ... The

0 - 13.30 h L U N C H - B R E A K 12.30 - 13.30 h

on 13
g and Interconnection (II)
17.20h
Karel Kurzweil, BULL S.A., Les-us-Bois, France;
age, BPA Ltd., Surrey, UK

con Multichip Module Technology ITED TALK)
s Hentzell, Industrial Microelectro-Center, Linköping, Sweden

cation and Cost Modelling of 's Using Photo BCB
rou et al., The Dow Chemical Co., h, NC, USA

ation of Photosensitive BCB rlevel Dielectric for a nication MCM-D
k et al., Siemens AG, Munich, y

Multichip Modules Process nent Using Photosensitive clobutene
iel, Technical University lin, Germany

ent of Chip on Glass Using Thermo-Setting ally Conductive Adhesives
ona, Johan Liu, The itute for Production Engine-ch, Göteborg, Sweden

Session 14
Materials and Technologies (IV)
13.30h - 15.30h
Chairmen: Wen H. Ko, Case Western Reserve University, Cleveland, OH, USA (tentative!);
Thomas Geßner, Technische Universität Chemnitz-Zwickau, Germany

13.30h **Bulk Micromachining Using Doping and Voltage Dependent p-n Junction Etch-Stop**
U. Schaber et al., Fraunhofer-Institute for Solid State Technology, Munich, Germany

13.50h **Silicon Grooves with Sidewall Angels down to 1° Made by Dry Etching**
Andreas Bertz, TU Chemnitz-Zwickau, Chemnitz, Germany

14.10h **ISFET Technology Using Micromechanical Process Elements**
Carmen Steiniger, TU Chemnitz-Zwickau, Chemnitz, Germany

14.30h **Dry Etching Techniques Applied to the Manufacturing of Back-Side Contacts ISFET**
Enric Cabruja, Centro Nacional de Microelectronica, Barcelona, Spain

14.50h **Simulated Data of Etching Diagram (Si:KOH)** Henri Camon, L.A.A.S., Centre National de Recherche Scientifique, Toulouse, France

15.10h **Etch Time Simulation for Membrane Fabrication in Boron Implanted Silicon Exposed to Multisequential Annealing**
Florian Gaiseanu, Institute of Microtechnology, Bukarest, Romania

Session 15
Actuators
13.30h - 17.20h
Chairman: H. Fujita, University of Tokyo, Japan;

13.30h **Fabrication of a Bistable Snapping Microactuator (INVITED TALK)**
Richard S. Muller et al., Berkeley Sensor & Actuator Center, Berkeley, USA

14.10h **Pneumatic Stabilization of Top-Drive Micromotors**
Hocine Ziad, ESIEE Microelectronics Lab., Noisy-Le-Grand, France

14.30h **Development and Test of an Electrostatically Driven Linear Stepping Motor**
R. Ruprecht et al., Institut für Mikrostrukturtechnik, Kernforschungszentrum Karlsruhe, Germany

14.50h **Design of Microactuators**
E. Kallenbach, Technical University of Ilmenau, Ilmenau, Germany

15.10h **Moving Wedge Actuator: An Electrostatic Actuator for Use in a Microrelay**
Joachim Schimkat, Technical University Berlin, Germany

Session 16
Microoptical Components
13.30h - 16.40h
Chairman: W. Kroy, MBB GmbH, Munich, Germany

13.30h **Microoptical Elements: Fabrication and Application**
Wolfgang Karthe, Fraunhofer-Institute for Applied Optics & Precision Mechanics, Jena, Germany

13.50h **Silicone as an Optical Material**
Håkan Elderstig, Industrial Microelectronic Center, Kista, Sweden

14.10h **Pb-Based Ferroelectric Thin Film Actuator for Optical Applications**
Minoru Sakata, Omron Corporation, Tsukuba-City, Japan

14.30h **Miniaturized Optical Systems for Beam Deflection and Modulation**
Rolf Göring, Fraunhofer-Gesellschaft IOF, Jena, Germany

14.50h **Miniaturized Laser-Doppler Velocimeter Using Microoptical Elements**
Wilhelm Stork, Institut für Technik der Informationsverarbeitung, Universität Karlsruhe (TH), Germany

15.10h **Micro Optical Elements with High Efficiency for Optical Interconnects**
Edgar Pawlowski et al., Heinrich-Hertz-Institut für Nachrichtentechnik Berlin GmbH, Germany

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...hr C O F F E E - B R E A K 15.30-16.00 Uhr

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16.00h **Inertial Micropositioners for Scanning Tunnel Microscopy**
Franco Bordoni, Dpt. Electrical Engineering, University of l'Aquila, Monteluco di Roio, Italy

16.20h **Electrostatic x-y Precision Drive for Large Ranges of Motion**
Günter Dreifke, PASIM Mikrosystemtechnik GmbH, Suhl, Germany

16.40h **A Dynamic Valve Produced by Anisotropic Etching in (100)-Silicon for the Application in a Simple Microbump Structure** Torsten Gerlach, Technische Universität Ilmenau, Germany

17.00h **Piezoelectric Micropumps Based on a New Deposition Technology for ZnO-Films** Norbert Schwesinger, Fakultät für Maschinenbau, Technische Universität Ilmenau, Ilmenau, Germany

16.00h **Polymer Waveguides for Integrated Thermo-Optic Tunable Space-Switching Elements at 1550 nm Wavelength**
Norbert Keil et al., Heinrich-Hertz-Institut für Nachrichtentechnik Berlin GmbH, Department Optical Signal Processing, Berlin, Germany

16.20h **"HIBITS" RACE Project: Micromechanical Structures for Optical Fibres in Board**
K. Allaert et. al., Alcatel Bell Telephone, Antwerpen, The Netherlands