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## Proceedings of the 7<sup>th</sup> **euspen** International Conference Volume I - Volume II

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Building 70, Cranfield University, Bedford  
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Tel: 0044 (0) 1234 754024

Fax: 0044 (0) 1234 754080

Email: [info@euspen.eu](mailto:info@euspen.eu)

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## Foreword

Nine years on from its initial inception, the European Society for Precision Engineering and Nanotechnology (**euspen**) represents a growing and highly active community with representation, today, across 32 countries worldwide. It continues to provide a mechanism for leading industrialists and researchers to cooperate, interact and build extended networks in these key technological areas.

The focus of **euspen** is on the development and exploitation of leading edge precision, micro and nanotechnologies including:

- Nano-precision manufacturing;
- Design and build of ultra-precision machine systems;
- Characterisation: metrology systems, instruments and techniques.

Progress in these areas continues to be driven by an ever increasing demand for products with enhanced functionality enabled through ultra precision/nanoscale design and manufacturing. Key developments and emerging applications in this field will be addressed at this 7<sup>th</sup> International Conference of the European Society for Precision Engineering and Nanotechnology.

The 8 technical sessions of the Society's 2007 international conference will cover new developments and reflect market forces in process technologies, machine tools/instruments and metrology in the ultra-precision, micro and nano engineering sectors. We have received more than 300 abstracts from 27 countries, the conference contributions have been reviewed and selected by an international board and all presented papers have been collated in these proceedings. A particular focus will be given this year to medical engineering applications. Further to this over 50 leading companies working in the field will present themselves within the technical exhibition. As such the meeting will provide an

excellent opportunity for all to share latest research, technology and product developments and survey those within the community.

We thank our colleagues on the International Scientific Committee, the conference Session Chairmen and the local organising committee for all their help and assistance. We also thank our sponsors Kugler GmbH, Robert Bosch and Precitech for their support for the conference. We would also like to thank Heidenhain GmbH for their provision of the student and Eastern European academic scholarships.

It gives me great pleasure, on behalf of the **euspen** council, to welcome you to the 7<sup>th</sup> International Conference at the excellent Congress Centre Bremen, venue for the first ever meeting of the Society in 1999. Bremen itself represents a leading centre of science and high tech industry and it gives me much pleasure to welcome you all to our city. We look forward to meeting with acquaintances old and new, to the sharing of ideas and the formation of important new partnerships.

Bremen, Germany May 2007

Prof. Ekkard Brinksmeier

**euspen** President

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<sup>2</sup> *Tokyo Institute of Technology, 4259 Nagatsuta, Yokohama 226-8503 Japan*

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Chairmen:

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C. Flucke

G. Goch

P. McKeown



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Chairmen:

Prof. C. Brecher, Fraunhofer IPT, Germany

Mr N. Marsilius, PMT Group, USA

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Prof. Moriwaki, Kobe University, Japan

Dr Reinhard Welle, THK GmbH, Germany

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94550 <sup>2</sup>General Atomics, San Diego CA USA 94550

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<sup>1</sup>University of California, Lawrence Livermore National Laboratory, P.O. Box 808, 7000 East Avenue, L-491, Livermore, CA 94550-9234 <sup>2</sup>QED Technologies, LLC, 1040 University Avenue, Rochester NY 14607 <sup>3</sup>Zygo Corporation, P.O. Box 448, Middlefield, CT 06455-0448 United States of America
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<sup>a</sup>LFM – Laboratory for Precision Machining, University of Bremen,  
Germany <sup>b</sup>JENOPTIK Polymer Systems GmbH, Triptis, Germany

<sup>c</sup>University of Applied Sciences Jena, Faculty SciTec, Jena,  
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(1)Nikon Corporation, Japan (2)Osaka University, Japan

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*1 RIKEN(The Institute of Physical and Chemical Research), Japan*

*2 Keio University, Japan*

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D.A. Lucca<sup>3</sup>

*<sup>1</sup>Department of Mechanical Engineering, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Room 3-470, Cambridge, MA 02139 USA <sup>2</sup>Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Room 10-176, Cambridge, MA 02139 USA <sup>3</sup>School of Mechanical and Aerospace Engineering, Oklahoma State University 218 Engineering North, Stillwater, OK 74078 USA*

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*<sup>1</sup>Centre Suisse d'Electronique et de Microtechnique, 2002 Neuchâtel, Switzerland <sup>2</sup>Paul Scherrer Institut, 5232 Villigen PSI, Switzerland*

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