



The Innovative Manufacturing Research Conference

Scottish Manufacturing Institute

You are invited to the first annual "**Innovative Manufacturing Research Conference**" of the Scottish Manufacturing Institute (SMI). The event programme provides both an overview of SMI research activities in the three main theme areas of areas of **Digital Tools, Micro-mechanical Systems (MEMS) & Photonics-based Manufacturing Technologies**, and invited presentations from leading international figures in relevant manufacturing technologies. It also provides a forum for leading international academics and industrialists to share knowledge and experience.

To facilitate effective dialogue, Poster Presentations will be the main vehicle for showcasing SMI research; conference attendees are also invited to submit contributed poster papers (see below).

Launched in 2003 with a £4.2 million Grant from EPSRC and financial support and active collaboration from industry, the SMI is based at Heriot-Watt University's Riccarton Campus in Edinburgh. It is one of the centres funded by EPSRC for manufacturing research in the UK and the only Innovative Manufacturing Research Centre (IMRC) in Scotland. The SMI is themed around three areas crucial to future manufacturing innovation: **Digital Tools, Micro-mechanical Systems (MEMS) & Photonics-based Technologies**. The SMI Conference offers opportunities to learn about academic research at the frontiers in each of these areas.

Programme

Monday June 27th

19.30 RECEPTION

20.00 DINNER

Tuesday June 28th

08.45 REGISTRATION AND COFFEE

09.25 Welcome - Professor John Simmons (Vice Principal, HWU)

09.30-12.05 Invited Speakers

09.30 Searching for 3D Models:
Professor Thomas Funkhouser,
Princeton University, USA



Prof Funkhouser's group at Princeton University are at the forefront of academic efforts to create a "Google for shapes". Such technology has the potential to transform productivity in applications ranging from engineering to entertainment.



10.15 Challenges in Manufacturing Test of Micro and Nano-Systems:

Professor Pascal Nouet, University of Montpellier, France



Professor Nouet's presentation will explore the challenges of manufacturing testing of Micro and Nano-Systems; an issue key to successful mass production of MEMS- and NEMS-based systems

11.00 COFFEE

11.20 New lasers and Applications for Industrial Manufacturing

Professor Peter Loosen, Fraunhofer-Institute for Laser Technology, Aachen, Germany



For years laser technologies have been the key to many new concepts, processes and manufacturing solutions. Recently high power diode lasers have been developed into powerful direct processing manufacturing tools and also as efficient pump sources for high brightness solid state lasers including disc, slab and fibre lasers. Examples of how these lasers are creating major new manufacturing opportunities will be discussed.

12.05 SMI Research Horizons

Overview of the SMI research portfolio describing the technological context and challenges that motivate each of the theme area

- **Digital Tools for Manufacture** – *Dr J. Corney, HWU*
- **Microsystems Technologies** – *Dr C Wang, HWU*
- **Photonics-based industrial technologies** – *Dr A Moore, HWU*

12.50 LUNCH

14.00 Trailers for Poster Session

Brief overview from the presenter of each poster.

15.00 Poster Session

The poster session will include a number of posters, including those listed below:

Monomode Fibre Array Manufacture using Microengineering Techniques; Optical Packaging of Microlens Arrays; MEMS FMEA - Application to micromotor and thermal actuator; Assembly, packaging and testing of a wafer scale micro-optical encoder; Laser joining of mems; The RADIKAL project; Manufacture and Characterisation of Microscale magnetic components; Measuring insect flight: High speed close range photogrammetry for Dynamic shape measurement; Dynamic full-field optical metrology for manufacturing applications; Delivery of high energy laser light through PBG fibre for laser machining; Pulsed Laser Micromachining of Engineering Ceramics; Process control of laser keyhole welding; Femtosecond Laser Machining; Iterative laser forming of non-developable surfaces

16.00 Laboratory Visits

Guided tours of the SMI research laboratories. Details to follow.

17.00 CLOSE

Poster Paper Submission:

Contributed poster presentations from academic and industrial colleagues are solicited – within our space constraints. Please use the on-line registration form located at http://www.smi.hw.ac.uk/Conference_reg.htm to submit Title, Authors, Affiliation and a 35 word abstract by **13 June 2005**

Registration

The Web page below provides an overview of the conference

<http://www.smi.hw.ac.uk/Conference.htm>

Location:

<http://www.hw.ac.uk/welcome/html/maps/edinburgh.htm>

If you require any further information please contact David Nisbet at D.J.Nisbet@hw.ac.uk