

Scientific and Social Programme

International Precision Assembly Seminar

IPAS 2010

Chamonix, France
14-17 February 2010



Organised by



The University of
Nottingham

precision
manufacturing centre



<http://www.ipas2010.org>

**International Precision Assembly Seminar
(IPAS 2010)
Scientific and Social Programme**

Majestic Conference Centre, Chamonix

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SUNDAY 14TH FEBRUARY 2010

19.30

**WELCOME RECEPTION
Majestic Conference Centre, 241 Allée du Majestic, Chamonix**

MONDAY 15TH FEBRUARY 2010

08.00	REGISTRATION at the Majestic Conference Centre	
08.30	WELCOME Professor Svetan Ratchev, University of Nottingham, UK	
08.45	KEYNOTE ADDRESS Dr Volker Klocke, Klocke Nanotechnik GmbH, Germany Title: Precision Assembly Goes Nano	
09.30	KEYNOTE ADDRESS Dr Andrew Smith, Kleindiek Nanotechnik GmbH, Germany Title: Give your Microscope a Hand: Handling, Mounting, and Characterising Materials at the Micro/Nano Scale	
10.15	COFFEE BREAK	
	PARALLEL SESSIONS	
	STREAM 1	STREAM 2
10.45-12.15	Design for Micro-Assembly <i>Chair: Prof B Nelson</i> Analysis of the Applicability of Design for Microassembly Theory to Biomedical Devices <i>C Tietje, D Smale, S Haley, S Ratchev</i> A Haptic Tele-operated System for Microassembly <i>P Estevez, S Khan, P Lambert, M Porta, I Polat, H Langen, M Tichem, R M Schmidt, U Staufer, C Scherer</i> Neutral Interface for Assembly and Manufacturing Related Knowledge Exchange in a Heterogeneous Design Environment <i>M Lanz, R Rodriguez, R Tuokko</i>	Development of Micro-joining Processes <i>Chair: Dr J Segal</i> Precision Assembling and Hybrid Bonding for Micro Fluidic Systems <i>A Koller-Hodac, M Altmeyer, S Walpen</i> Feasibility of Laser Induced Plasma Micro-machining (LIP-MM) <i>K Pallav, K Ehmann</i> Focused Ion Beam Micro Machining and Micro Assembly <i>H Yang, S Ratchev</i>
12.15	END OF FIRST SESSIONS	
16.45-18.15	Modular Reconfigurable Assembly Systems (1) <i>Chair: Prof S Dimov</i> Application of a Reconfiguration Methodology for Multiple Assembly System Reconfigurations <i>D Smale, S Ratchev</i> Multi-Agent Architecture for Reconfiguration of Precision Modular Assembly Systems <i>P Ferreira, N Lohse, S Ratchev</i> Reconfigurable Self-Optimising Handling System <i>R Müller, M Riedel, M Vette, B Corves, M Esser, M Hüsing</i>	Gripping and Handling Solutions (1) <i>Chair: Prof R Leach</i> Improvement of Robotic Micromanipulations using Chemical Functionalisation <i>J Dejeu, P Rougeot, M Gauthier, W Boireau</i> Positioning, Structuring and Controlling with Nanoprecision <i>T Heiler, R Hedderich, S Walheim</i> Challenges of Precision Assembly with a Miniaturised Robot <i>A Burisch, A Raatz, J Hesselbach</i>
19.00	SEMINAR DINNER AT THE HOTEL DU MONTENVERS, NR CHAMONIX	

TUESDAY 16TH FEBRUARY 2010

08.30	<p>KEYNOTE ADDRESS Professor Richard Leach, National Physics Laboratory, UK Title: Three-dimensional measurement of micro-scale structures</p>					
PARALLEL SESSIONS						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">STREAM 1</th> <th style="width: 50%; text-align: center;">STREAM 2</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <p>High Precision Positioning and Alignment Techniques (1) Chair: Prof J Jacot</p> <p>Alignment Procedures for Micro-Optics <i>M Mohaupt, E Beckert, R Eberhardt, A Tünnermann</i></p> <p>Pneumatic Driven Positioning and Alignment System for the Assembly of Hybrid Microsystems <i>C Brecher, M Freundt, C Wenzel</i></p> <p>Flexure-Based 6-Axis Alignment Module for Automated Laser Assembly <i>C Brecher, N Pyschny, J Behrens</i></p> </td> <td style="vertical-align: top;"> <p>Metrology and Control for Micro-Assembly Chair: Prof M Björkman</p> <p>Miniaturised Camera Systems for Microfactories <i>T Prusi, P Rokka, R Tuokko</i></p> <p>Vision and Force Sensing to Decrease Assembly Uncertainty <i>R J Ellwood, A Raatz, J Hesselbach</i></p> <p>Modelling the Interaction Forces between an Ideal Measurement Surface and the Stylus Tip of a Novel Vibrating Micro-Scale CMM Probe <i>J D Claverley, A Georgi, R K Leach</i></p> </td> </tr> </tbody> </table>			STREAM 1	STREAM 2	<p>High Precision Positioning and Alignment Techniques (1) Chair: Prof J Jacot</p> <p>Alignment Procedures for Micro-Optics <i>M Mohaupt, E Beckert, R Eberhardt, A Tünnermann</i></p> <p>Pneumatic Driven Positioning and Alignment System for the Assembly of Hybrid Microsystems <i>C Brecher, M Freundt, C Wenzel</i></p> <p>Flexure-Based 6-Axis Alignment Module for Automated Laser Assembly <i>C Brecher, N Pyschny, J Behrens</i></p>	<p>Metrology and Control for Micro-Assembly Chair: Prof M Björkman</p> <p>Miniaturised Camera Systems for Microfactories <i>T Prusi, P Rokka, R Tuokko</i></p> <p>Vision and Force Sensing to Decrease Assembly Uncertainty <i>R J Ellwood, A Raatz, J Hesselbach</i></p> <p>Modelling the Interaction Forces between an Ideal Measurement Surface and the Stylus Tip of a Novel Vibrating Micro-Scale CMM Probe <i>J D Claverley, A Georgi, R K Leach</i></p>
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10.45 COFFEE BREAK						
11.15-12.45	<p>High Precision Positioning and Alignment Techniques (2) Chair: Prof K Ehmann</p> <p>Approach for the 3D-alignment in Micro- and Nanoscale Assembly Processes <i>T Wich, C Stolle, M Mikeczinski, S Fatikow</i></p> <p>Guidelines for Implementing Augmented Reality Procedures in Assisting Assembly Operations <i>G Dini, V Chimienti, S Iliano, M Dassisti, F Failli</i></p> <p>Monodirectional Positioning Using Dielectric Elastomers <i>C Pagano, M Malosio, I Fassi</i></p>	<p>Gripping and Handling Solutions (2) Chair: Dr I Fassi</p> <p>Active Gripper for Hot Melt Joining of Micro Components <i>S Rathmann, A Raatz, J Hesselbach</i></p> <p>Grasping and Interaction Force Feedback in Microassembly <i>M Porta, M Tichem</i></p> <p>Low Voltage Thermo-Mechanically Driven Monolithic Micro-Gripper with Piezo-resistive Feedback <i>V Stavrov, E Tomerov, C Hardalov, D Dantchev, K Kostadinov, G Stavreva, E Apostolov, A Shulev, A Andonova, M Al-Wahab</i></p>				
12.45 END OF FIRST SESSIONS						
18.00-19.30	<p>Tolerancing for Micro-Assembly Chair: Dr C Tietje</p> <p>Defining Tolerances in Assembly Process with the Aid of Simulation <i>H-A Crostack, R Refflinghaus, J Liangsiri</i></p> <p>Assembly Analysis of Interference Fits in Elastic Materials <i>K Subramanian, E Morse</i></p> <p>How Form Errors Impact on 2D Precisions Assemblies with Clearances? <i>P-A Adragna, S Samper, H Favreliere</i></p>	<p>Innovative Assembly Processes Chair: Dr A Raatz</p> <p>Hybrid Assembly for Ultra-precise Manufacturing - HYDROMEL <i>A Steinecker</i></p> <p>Development of the Roll Type Incremental Micro Pattern Imprint System for Large Area Pattern Replication <i>Jung-Han Song, Hye-Jin Lee, Shuhuai Lan, Nak-Kyu Lee, Geun-An Lee, Tae-Jin Lee, Seogou Choi, Sung-Min Bae</i></p> <p>Utilisation of FIB/SEM Technology in the Assembly of an Innovative Micro-CMM Probe <i>D Smale, R Ronaldo, S Haley, S Ratchev, J Segal, R K Leach, J D Claverley</i></p>				
20.00	EVENING MEAL AT RESTAURANT L'IMPOSSIBLE (OPTIONAL)					

WEDNESDAY 17TH FEBRUARY 2010

PARALLEL SESSIONS		
	STREAM 1	STREAM 2
09.00-10.30	<p>Modular Reconfigurable Assembly Systems (2) <i>Chair: Dr N Lohse</i></p> <p>Modular and Generic Control Software System for Scalable Automation in Micro Production <i>M Freundt, C Brecher, C Wenzel</i></p> <p>Agile Multi-Parallel Micro Manufacturing Using a Grid of Equiplets <i>E Puik, L van Moergestel</i></p> <p>Development of a Reconfigurable Fixture for the Automated Assembly and Disassembly of High Pressure Rotors for Rolls-Royce Aero Engines <i>T Papastathis, M Ryll, S Bone, S Ratchev</i></p>	<p>Micro-Factory <i>Chair: Dr A Steinecker</i></p> <p>Architectures and Interfaces for a Micro Factory Concept <i>N Siltala, R Heikkilä, R Tuokko</i></p> <p>Desktop Micro Forming System for Micro Pattern on the Metal Substrate <i>H-J Lee, J-H Song, S-K Oh, K-T Kim, N-K Lee, G-A Lee, H-W Lee, A Chu</i></p> <p>Miniaturisation of Flexible Screwing Cell <i>A Vuola, R Heikkilä, T Prusi, P Rokka, R Tuokko</i></p>
10.30	COFFEE BREAK	
11.00-12.30	<p>Micro-Assembly Technology Studies <i>Chair: Dr M Dickerhof</i></p> <p>A Cooperation Model and Demand-Oriented ICT Infrastructure for SME Development and Production Networks in the field of Microsystem Technology <i>M Dickerhof, U Gengenbach</i></p> <p>A Methodology for Evaluating the Technological Maturity of Micro and Nano Fabrication Processes <i>E Brousseau, R Barton, S Dimov, S Bigot</i></p> <p>Function and Length Scale Integration Study in Emerging MST-Based Products <i>S Bigot, R Minev, T Dobrev, S Dimov, C Matthews</i></p>	
12.30	BUFFET LUNCH	
	FRAME Project Review (FRAME participants only)	

SUNDAY 14TH FEBRUARY 2010

19.30	Welcome Reception Majestic Conference Centre, 241 Allée du Majestic, Chamonix
Information	Located close to the hotels and 200 metres from the town centre. Dress code: Casual



MAJESTIC CONFERENCE CENTRE

The Majestic was originally a grand hotel built at the beginning of the last century. It has been completely renovated and very well equipped as a conference centre, while preserving its luxury atmosphere.

MONDAY 15TH FEBRUARY 2010

19.00	Seminar Dinner Hotel du Montenvers, nr Chamonix
Information	We will travel by train to the venue. The train departs from Montenvers train station in Chamonix at 19.30. You may either meet us at the station at 19.15 or walk with us to the station from the Majestic Conference Centre (leaving at 19.00). There will be time after the evening session to return to the hotel and change before we set off. Dress Code: Casual/Warm clothes



RESTAURANT DU MONTENVERS

After a short train journey we will arrive at the fabulous resort of Montenvers – Mer de Glace, where we can look at the glacier and famous mountains before dinner. The Hotel du Montenvers was built in 1880 and the well renovated restaurant is welcoming with a warm mountain atmosphere.

TUESDAY 16TH FEBRUARY 2010

20.00	Evening Meal at Restaurant l'Impossible (optional)
Information	10 minutes' walk from the town centre. Dress Code: Smart/Casual



RESTAURANT L'IMPOSSIBLE

Here we can sample the area's rich and local cuisine in the charming surroundings of an authentic farmhouse dating back to 1754. The restaurant has a selection of high-quality wines and innovative dishes.

ADDITIONAL ACTIVITIES

We hope you will enjoy your time in Chamonix. There will be opportunities to enjoy the local facilities and in particular to enjoy the snow! If you would like any assistance with booking activities or would like more details, please do not hesitate to contact us. You can also check the Chamonix website: www.chamonix.com, including the downloadable blue brochure.



In winter, Chamonix is so much more than just a ski resort and there really is something to suit all tastes in this lively alpine town.

For those who prefer the quietude of forest trails, there are many walking and snow-shoeing possibilities along the flanks of the valley.

An excellent sports complex offering swimming pools, climbing wall, squash, tennis, keep fit and spa facilities, not to mention a superb ice-rink. For the more adventurous there's tandem paragliding, or you could even try your hand at dog sled driving! Further afield there are organised excursions to the "Aiguille du Midi" and the "Mer de Glace", and of course some wonderful skiing and boarding opportunities in excellent snow conditions with outstanding panoramas of the Alps. Here are some indicative rates for ski passes:

Duration	Chamonix Le Pass		Mont-Blanc « Unlimited »	
	Individual	+ 21 pers.	Individual	+ 21 pers.
4 hours ski	35 €	33,30 €	/	/
1 day	40 €	38 €	49,50 €	47 €
2 days	75 €	71,30 €	97 €	92,20 €
3 days	110 €	104,50 €	145 €	137,80 €
4 days	145 €	137,80 €	181 €	172 €
5 days	180 €	171 €	216 €	205,20 €
6 days	200 €	190 €	240 €	228 €

and indicative group prices (for more than 15 people):

	1/2 day	1 day	2 days
DOWNHILL SKI (Skis, shoes & poles)	12 – 22 €	17 - 36 €	34 - 72 €
SKI JACKET (Gore Tex)	/	13,50 – 14,50 €	27 – 29 €
SKI PANTS (Gore Tex)	/	7,50 – 8,50 €	15 – 17 €



SEMINAR ORGANISATION

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