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IFIP – The International Federation for Information Processing

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP’s aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

*IFIP’s mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.*

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP’s events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.
Preface

The development of new-generation micro-manufacturing technologies and systems has revolutionised the way products are designed and manufactured today with a significant impact in a number of key industrial sectors. Micro-manufacturing technologies are often described as disruptive, enabling and interdisciplinary leading to the creation of whole new classes of products that were previously not feasible to manufacture. While key processes for volume manufacture of micro-parts such as machining and moulding are becoming mature technologies, micro-assembly remains a key challenge for the cost-effective manufacture of complex micro-products. The ability to manufacture customizable micro-products that can be delivered in variable volumes within relatively short timescales is very much dependent on the level of development of the micro-assembly processes, positioning, alignment and measurement techniques, gripping and feeding approaches and devices.

Micro-assembly has developed rapidly over the last few years and all the predictions are that it will remain a critical technology for high-value products in a number of key sectors such as healthcare, communications, defence and aerospace. The key challenge is to match the significant technological developments with a new generation of micro-products that will establish firmly micro-assembly as a mature manufacturing process.

The book includes the set of papers presented at the 5th International Precision Assembly Seminar IPAS 2010 held in Chamonix, France from the 14th to the 17th February 2010. The International Precision Assembly Seminar was established on 2003 by the European Thematic Network Assembly-Net to provide a forum for discussing the latest research, new innovative technologies and industrial applications in the area of precision (mini and micro) assembly.

The published works have been grouped into four parts. Part 1 is dedicated to micro-product design with specific emphasis on design for micro-assembly (DFμA) methods and solutions. Part 2 is focused on micro-assembly processes and includes contributions in process modelling, high-precision packaging and assembly techniques and specific examples of micro-assembly applications. Part 3 describes the latest developments in micro-gripping, micro-feeding and micro-metrology. Part 4 provides an overview of the recent developments in the design of micro-assembly production systems with specific emphasis on reconfigurable modular micro-assembly equipment solutions.

The seminar is sponsored by the International Federation of Information Processing (IFIP) WG5.5, the International Academy of Production Research (CIRP) and the European Factory Automation Committee (EFAC). The seminar is supported by a number of ongoing research initiatives and projects including the European sub-technology platform in Micro and Nano Manufacturing MINAM, the UK EPSRC Grand Challenge Project 3D Mintegration, the EU-funded coordinated action NanoCom and the EU-funded collaborative project FRAME.
The organisers should like to express their gratitude to the members of the International Advisory Committee for their support and guidance and to the authors of the papers for their original contributions. Our special thanks go to Luis Camarinha-Matos, Chair of the IFIP WG5.5, and Michael Hauschild, Chair of the STC A of CIRP, for their continuous support and encouragement. And finally our thanks go to Ruth Strickland and Rachel Watson from the Precision Manufacturing Centre at the University of Nottingham for handling the administrative aspects of the seminar, putting the proceedings together and managing the detailed liaison with the authors and the publishers.

February 2010

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