

## Professor Stefan Dimov Dipl Ing, PhD, DSc, CEng, FIMechE

Professor of Micro Manufacturing  
Head of Advanced Manufacturing Technology Centre  
Head of Quality Assurance

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### About

Stefan Dimov is Professor of Micro Manufacturing in the School of Mechanical Engineering.

He carried out research on feature-based design support systems, rapid manufacturing, laser ablation and hybrid tooling methods. His recent research encompasses the wider areas of micro and advanced manufacturing technologies.

To date, Stefan has published more than 180 papers and co-authored 2 books and has supervised more than 25 PhD students. He is a member of the Peer Review Colleges of the UK, Enterprise Ireland, the Italian and Flanders Research Councils and an expert reviewer for the European Commission in the area of advanced manufacturing technology. He has received major grants from EPSRC, DTI, WDA, WAG, TSB and EC.

Stefan is the recipient of the Thomas Stephen Group Prize awarded by the Institution of Mechanical Engineers in 2000 and 2003.

### Qualifications

- DSc in Advanced Manufacturing Technology 2011
- Fellow of IMechE, 2010
- Chartered Engineer, IMechE, 2010
- PhD in Manufacturing Engineering 1989
- Dipl. Eng. in Mechanical Engineering - 1984

### Biography

Stefan Dimov obtained his Diploma Engineer and Doctoral degrees in 1984 and 1989 respectively from Moscow State University of Technology and the Doctor of Science degree in 2011 from Cardiff University.

In 1994, Stefan started his professional career at Cardiff University (CU) as a Research Associate working on an EC funded research project. Following this he was promoted first to a Senior Research Associate post and then to the General Manager, Distinguished Senior Research Fellow and Operations Director of the Manufacturing Engineering Centre (MEC) with responsibilities for a portfolio of R&D projects and for supervising post docs and PhD students under three themes, engineering applications of AI techniques, concurrent engineering and advanced manufacturing technology.

In 2001, a Micro and Nano Manufacturing R&D programme was initiated by him with a focus on advanced manufacturing research for miniaturised products and systems. In 2004, Stefan became a Co-Director of the CU Innovative Manufacturing Research Centre (CUIMRC) that was established with an award of a £3.25M grant from EPSRC's Innovative Manufacturing Programme. Also, in 2004 a 7.5 M€ grant was secured from the EC to establish an European Network of Excellence (NoE) in Multi-Material Micro Manufacture (4M) and Stefan was appointed as the Network Coordinator/Director. In 2005, in recognition of the MEC research achievements and state-of-the-art facilities in Micro and Nano Technology (MNT) the Centre became one of the main nodes within the UK MNT Network with the award of a £3.5M capital grant from the DTI and Welsh Assembly Government (WAG).

Since his promotion to Personal Chair in 2006 he has continued to carry out research in Advanced Manufacturing Technology, with a special focus on advances in Micro and Nano Manufacturing. In his academic career Stefan has so far published over 180 articles in peer reviewed journals, academic & industry conferences, and trade publications and co-authored 2 books. He has supervised 21 PhD candidates to successful completion and has been awarded 6 Research Councils' grants.

Stefan is an active researcher with core expertise in characterisation, modelling and development of manufacturing technologies, maintaining a significant output of papers in journals of international standing while also having a proven track record for initiating and managing research projects involving strong end user participation (more than 120 such organisations to-date). He is an enthusiastic team player and, as such, he welcomes opportunities to employ his skills through acting as a project co-investigator and regularly co-author with colleagues and research students. Also, Stefan is proactive in encouraging a supportive culture for personal development among those he leads.

Stefan joined Birmingham University in 2011 and currently he is Professor of Micro Manufacturing in the School of Mechanical Engineering.

### Teaching

#### RESEARCH THEMES

Micro and Nano Manufacturing

- Laser machining

- FIB milling
- Micro EDM
- Micro milling
- Micro replication

#### Layer Based Manufacturing

- Selective Laser Sintering
- Stereolithography

#### Concurrent Engineering

#### Design decision support systems

#### CAD/CAM systems

#### Some of the major grants awarded to S Dimov as principal investigator:

- "Multi-Material Micro Manufacture" (4M), EC FP6 NMP Project, £1,290K, Oct 2004-Sep 2008
- "Tooling for Non-Silicon Micro Components ( $\mu$ Tooling)", CUIMRC (EPSRC) Project, £608K, Jan 2005 – Dec 2007
- "Charged Particle Nanotech (CHARPAN)", EC FP6 NMP Project, £218K, Apr 2005 – Mar 2009,
- "Facilities for Micro-machining and micro fabrication of non-silicon components (MicroBridge)", DTI MNT Project £5,005K, Sep 2005 – Jan 2010,
- "Surface Enhanced Micro Optical Fluidic Systems (SEMOFS)", EC FP6 IST Project, £211K, Sep 2005 – Aug 2008
- "Network of Excellence for the Exploitation of Organic and Large Area Electronics (PolyNet)", EC FP7 ICT project, £130K, Jan 2008 – Dec 2010
- "Rolled multi material layered 3D shaping technology (MULTILAYER)", FP7 NMP LsP, €467K, 1 Oct 2008 – 31 Sep 2012
- "Access to Nanoscience and Nanotechnology Equipment at Cardiff", EPSRC project, £539K, Oct 2008- Sep 2012
- "Converging technologies for micro systems manufacturing (COTECH)", FP7 NMP LsP, €306K, 1 Oct 2008 – 31 Sep 2012
- "Printable, Organic and Large-Area Realisation of Integrated Circuits (POLARIC)", FP7 ICT LsP, €965K, 1 Jan 2010 – 31 Dec 2013
- "Flexible Compression Injection Moulding Platform for Multi-Scale Surface Structures (IMPRESS)", FP7 NMP LsP, €332K, 1 May – 30 Apr 2013
- "Access to Nanoscience and Nanotechnology Equipment at Cardiff ("nanoaccess@cardiff)", Project funded by EPSRC, £539K, 1 Oct 2008 – 31 Sep 2012
- "Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire (EUMINAFab)", Access to infrastructure project funded by EC FP7 Infrastructure, €841K, 1 Mar 2009 – 28 Feb 2013

#### Other activities

- Leading role in major international initiatives, European Micro and Nano Manufacturing (MINAM) platform and European Initiative for Sustainable Development by Nanotechnologies (NANOfutures)
- Member of the Executive Boards of the 4M International Association ([www.4m-association.org](http://www.4m-association.org)) and European Infrastructure in Micro and Nano Manufacturing, EUMINAFab ([www.euminafab.eu](http://www.euminafab.eu))
- Member of the Editorial Board of the IMechE Journal Part B "Engineering Manufacture"
- Fellow of the the Institution of Mechanical Engineers
- Chair or Co-Chair of 4M2005 in Karlsruhe (Germany); 4M2006 in Grenoble (France); 4M2007 in Borovets (Bulgaria), 4M2008 in Cardiff (UK), 4M/ICOMM 2009 in Karlsruhe (Germany), 4M2010 in Oyonnax (France) and 4M2011 in Stuttgart (Germany)

#### Publications

- Griffiths C A, Dimov S S, Scholz S, Tosello G, Cavity Air Flow Behavior During Filling in Microinjection Molding, ASME J. Manufacturing Science and Engineering (ASME Top 10 Most Viewed Article March & April 2011) , 133 (1) (2011) 10.1115/1.4003339
- Griffiths C A, Dimov S S, Scholz S, Tosello G, Cavity pressure behaviour in micro-injection moulding, ASME. J. Manuf. Sci. Eng. , 133 (3) (2011) 031007 10.1115/1.4003953
- Minev R, Llieva M, Kettle J, Dimov S, Deposition and focused ion beam milling of anticorrosive CrC coatings on tool steel substrates, Int. J. Advanced Manufacturing Technology , 47 (1-4) (2010) 29-35
- Velkova V, Lalev G, Hirshy H, Dimov S, Design and validation of a novel master-making process chain for organic and large area electronics on flexible substrates, Microelectronic Engineering , 87 (11) (2010) 2139-2145
- Griffiths CA, Dimov SS, Brousseau EB, Chouquet C, Gavillet J, Bigot S, Investigation of surface treatment effects in micro-injection-moulding, Int. J. Avd. Manuf. Technol. , 47 (1) (2010) 99
- Popov K, Dimov S, Ivanov A, Pham D T, Gandarias E, New tool-workpiece setting up technology for micro-milling, Int. J. Advanced Manufacturing Technology , 47 (1-4) (2010) 21-27
- Brousseau E B, Krohs F, Caillaud E, Dimov S S Gibaru O, Fatikow S, Development of a novel process chain based on Atomic Force Microscopy scratching for small and medium series production of polymer nano structured components, ASME Journal of Manufacturing Science and Engineering , 132 (3) (2010) 10.1115/1.4001481
- Brousseau E, Dimov S S, Pham D T, Some recent advances in multi-material micro- and nano- manufacturing, International Journal of Advanced Manufacturing Technology , (47) (2010) Chapter 1-4, 161-180
- Pasantonopoulos C, Dimov SS, Pham DT, Setchi RM, An object-orientated framework for virtual intelligent product manuals, International Journal of Systems Science , 40 (2) (2009) 187-204
- Dimov S, Quintana I, Dobrev T, Aranzabe A, Lalev G, Investigation of amorphous and crystalline Ni alloys response to machining with micro-second and pico-second lasers, Applied Surface Science , 255 (2009) 13-14
- Zaitzev S, Svinsov A, Lalev G, Dimov S S, Velkova V, Hirshy H, FIB sputtering optimization using Ion Reverse Software, Microelectronic Engineering , 86 (4-6) (2009) 544-547
- Lalev G, Petkov P, Sykes N, Hirshy H, Velkova V, Dimov S S, Barrow D, Fabrication and validation of fused silica NIL templates incorporating different length scale

features, *Microelectronic Engineering* , 86(4-6) (2009) 705-708

- Kettle J, Hoyle R T, Dimov S S, Fabrication of Step-and-Flash Imprint Lithography (S-FIL) templates using XeF<sub>2</sub> enhanced focused Ion Beam Etching, *J. Applied Physics A: Materials Science and Processing* , 96(4) (2009) 819-825
- Dobrev T, Pham D T, Dimov SS, Techniques for improving surface quality after lasing milling, *Proc. Inst. Mechanical Engineers Part B: Journal of Engineering Manufacture* , 222(1) (B) (2008) 55-65
- Kettle J, Coppo P, Lalev G, Tattershall C, Dimov S S, Turner M L, Development and validation of functional imprint material for the step and flash imprint lithography process, *Microelectronic Engineering* , 85 (5-6) (2008) 850-852
- Kettle J, Hoyle R T, Dimov S S, Perks R M, Fabrication of complex 3D structures using Step and Flash Imprint Lithography (S-FIL), *Microelectronic Engineering* , 85(5-6) (2008) 853-855
- Griffiths CA, Dimov SS, Brousseau EB, Packianather M, The finite element analysis of melt flow behaviour in micro-injection moulding, *Proceedings of the Institution of Mechanical Engineers, Part B, Journal of Engineering Manufacture* , 222 (B9) (2008) 1107-1118
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- Kettle J, Hoyle R T, Perks R M, Dimov S S, Overcoming material challenges for replication of "Motheys Lenses" using Step and Flash Imprint Lithography (S-FIL) for opto-electronic applications, *J. Vacuum Science and Technology B*, 26 (5) (2008) 1794-1799
- Charmeux J-F, Minev R, Dimov S, Minev E, Brousseau E, Harrysson U, Benchmarking of three processes for producing castings incorporating micro/meso-scale features with a high aspect ratio, *Proceedings of the Institution of Mechanical Engineers, Part B, Journal of Engineering Manufacture* , 221 (B4) (2007) 577-589
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