Curriculum Vitae of Prof. Stefan Dimov (Jun 2022)

1. Personal Summary

Education

1979-84	**Dipl. Eng. (1st Class Hons)** in Mechanical Engineering, Specialisation in the field of CAD/CAM systems, **Moscow Technological University "MOSTANKIN",** Russia (State Scholarship)
1985-89	**PhD degree in Manufacturing Engineering**, Thesis titled: "Assessment of utilisation efficiency of Flexible Manufacturing Systems", **Moscow Technological University "MOSTANKIN",** Russia (State Scholarship)
2011	**DSc degree**, Submission title: "Contributions to Advanced Manufacturing Technology", **Cardiff University**, UK,

Qualifications and prizes

2000	**Thomas Stephen Group Prize** awarded by the Institution of Mechanical Engineers
2003	**Thomas Stephen Group Prize** awarded by the Institution of Mechanical Engineers
2010	**Chartered Engineer** of the Institution of Mechanical Engineers
2010	**Fellow** of the Institution of Mechanical Engineers
2017	**Joseph Whitworth Prize** awarded by the Institution of Mechanical Engineers

2. Career to date

2016 to date	**Head of Manufacturing Research Group (MRG)** at the School of Engineering, University of Birmingham
May 2012 To date	**Head of the Advanced Manufacturing Technology Centre** at the Department of Mechanical Engineering, University of Birmingham
Oct 2011 to date	**Professor of Micro Manufacture** at the School of Mechanical Engineering, **University of Birmingham.**
2008-2010	**Non-executive Director of MicroBridge Services Ltd.**, Cardiff University spin-off company offering contract research and manufacture services in MNT.
2006 to Sep 2011	**Professor of Advanced Manufacturing Technology and the MEC Chair of Research,** School of Engineering, **Cardiff University**.
2004 to Sep 2010	**Co-Director of the Cardiff University Innovative Manufacturing Research Centre (CUIMRC)** funded by the EPSRC for a period of 5.5 years.
2000-2006	**Distinguished Senior Research Fellow** and **the MEC Operations Director**, School of Engineering, **University of Wales Cardiff**,
1996-99	**General Manager** of the Manufacturing Engineering Centre (MEC), School of Engineering, **University of Wales Cardiff**.
1995-96	**Senior Research Associate**, Assistant Head of the Intelligent Systems Laboratory, School of Engineering, **University of Wales Cardiff**.
1994-95	**Research Associate** employed on an EC funded BRITE/EURAM research project, School of Engineering, **University of Wales Cardiff**
Oct. 1991-Mar. 1992	**Visiting researcher** in the School of Electrical, Electronic and Systems Eng. with personal EC TEMPUS Fellowship, **University of Wales, College of Cardiff**.
1989-94	**Senior Lecturer** in the Department of Manufacturing Engineering, **Technical University of Rousse**, Bulgaria.
1984-85	**Lecturer** in the Department of Manufacturing Engineering, **Technical University of Rousse**, Bulgaria.

3. Education

Teaching-related activities

Since moving to Birmingham in 2011 I have taken over and/or developed the following modules
- Y2 Mechanical Design A
- Y4 Synoptic Mechanical Engineering.
- Y4 Laser Based Manufacturing
- Y4 Advanced Manufacturing

Consistently, the student evaluation for these modules is very good.

Currently teaching the following modules:
- Y4 Synoptic Mechanical Engineering (Coordinating the module delivery with 15 academic and 2 industry lectures).
- Y4 Advanced Manufacturing (Responsible for the delivery of Laser Based Manufacturing part of the module)

Supervision of students:
- Supervising 4 to 7 FYP BEng/MEng projects each year
- Supervising 2 to 4 MSc projects each year.
- Supervision of 2 to 3 Groups of IDP 3 team projects

4. Research

Current research interest

Research in Advanced Manufacturing Technology for more than 30 years, with a special focus on advances in Micro and Nano Manufacturing (MNM), Additive Manufacturing and Hybrid Manufacturing in the last 15 years. Core expertise in characterisation, modelling and development of manufacturing technologies and current research interests in:

- **Micro and Nano Manufacturing.** The focus is on batch manufacture of miniaturised parts, micro tool-making and replication as key enabling technologies for scale up MNM. Particularly, the research is focused on investigating and optimising complementary machining, tool-making and replication technologies, such as laser machining, focus ion beam (FIB) milling, micro electro discharge machining (EDM), micro milling, micro injection moulding and embossing. Another aspect of my research in this field is the design and validation of tool making and manufacturing process chains that integrate component technologies to address specific application requirements.
- **Layer Based Manufacturing (LBM).** Interests in applying the LBM principals to a range of material removal processes, e.g. milling, laser ablation, laser direct manufacturing, EDM and FIB milling, and by combining their technological capabilities in hybrid manufacturing platforms to address requirements for function and length scale integrations in existing and new emerging products. This include the development and validation of CAD/CAM solutions for “adaptive” LBM of large 3D surfaces and automating the datum set-up operations, and thus to facilitate the seamless integration of beam-based modules for functional surface texturing with other machining processes.
- **Laser Structuring/Texturing/Annealing.** The research is focused on the process design in implementing laser-based modules for functional surface structuring, texturing and polishing that can be integrated with other component technologies, e.g. milling, into machining platforms for achieving function and length scale integration in existing and new emerging products targeting various eco/bio application areas. The capabilities and process design issues in employing the latest generation of industrial ultra-short pulsed lasers, especially femto- and pico- second laser sources, and MOPA-based Yb fibre lasers for scanning micro-processing and surface structuring are of a particular interest in this research.
- **Synergistic Process-Material Design.** The research is focused on the development of a systematic approach for synergistic deployment of advanced material processing technologies, especially those for grain refinement and deposition of amorphous and nanostructured materials with their superior mechanical and physical properties in combination with their respective machining, structuring and forming technologies. The motivation is to create hybrid manufacturing platforms for incorporating nano, micro and meso scale functional layers/structures/features in devices/components.

- **Technology Maturity Assessment**. The research aims to develop and implement a methodology for systematic analysis of technological interfaces between material processing, machining, structuring, forming and replication processes in hybrid manufacturing platforms that takes into account the processing capabilities of both the individual processes involved and their interdependencies, and also the overall capabilities of given two processing technologies (process pairs) in achieving the functional requirements of a product.

Research grants and awards - received

After moving to the University of Birmingham on 1st Oct 2011.

Principal Investigator/Co-Investigator on 18 research grants funded by EC, TSB, Innovate UK, EPSRC, ESIF, British Council, Korean Government and industry with a total budget in excess of £13.5M as follows:

Title	Funder	Duration	Value	Role
Laser-Based Modules for Functional Surface Texturing: Integration and Process Design Issues	KIMM	Nov '11- May '16	£190K	PI
Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire (EUMINAfab)	EC FP7	Feb '12 – Aug '13	80K€	Joint Lead PI
ECO-efficient LASER technology for FACTories of the future (ECO-LASERFACTS)	EC INTERREG IVB NWE	May '12 – Apr '15	€145K	Joint Lead PI
High performance Production line for Small Series Metal Parts (Hyproline)	EC FP7	Sep '12 – Aug '15	€375K	PI
Laser machining of passive micro wave components and bulk metallic glasses	EPSRC	Jan – Mar '13	£5K	PI
High throughput integrated technologies for multimaterial functional Micro Components (HINMICO)	EC FP7	Oct '13 –Sep'16	€316K	PI
Advanced Manufacturing of Multi-Material Multi-Functional Products towards 2020 and Beyond (4M2020)	EC FP7	Sep '13 – Aug '16	€141K	PI
Laser Enabled Advanced Printing" (LEAP)	TSB	Apr-Sep 2014	£20K	PI
Adaptive Post-Processors for High Dynamics Beam Deflectors	Irepa-Laser	Jun-Jul 2014	€5.5K	PI
Multi Material Micro Manufacture (4M) Association	Members & 4M Conferences		~€50-60K per year	PI
Laser Based Hybrid Remanufacture of Complex High Performance Parts (Laser-Reman)	CAT	Jan-Dec 2015	£70K	PI
Micromachined Circuits For Terahertz Communications	EPSRC	Jun '15 – May '18	£1,037K	Co-I
European ESRs Network on Short Pulsed Laser Micro/Nanostructuring of Surfaces (LASER4FUN)	EC H2020 ITN	Sep '15 – Aug '19	2	PI
Laser Machining of Ceramic Interface Cards for 3D wafer bumps	KIAT	Nov '15 – Sep '18	£168K	PI
Modular laser based additive manufacturing platform for large scale	EC H2020 FoF	Oct '16 – Sep '19	€690K	PI

industrial applications (MAESTRO)				
High-Impact Injection Moulding Platform for mass-production of 3D and/or large micro-structured surfaces with Antimicrobial, Self-cleaning, Anti-scratch, Anti-squeak and Aesthetic functionalities (HIMALAIA)	EC H2020 FoF	Oct '17 – Sep '20	€705K	PI
Laser Texturing/Patterning of 3D Surfaces	MTC Scholarship	Oct '17 – Sep '20	£50.5K	PI
Surface functionalisation for food, packaging, and healthcare applications	UKIERI DST	Apr '18 – Mar '21	£20K	PI
Hybrid Manufacturing	MTC Scholarship	Oct '18 – Sep '21	£51K	PI
Smart Factory Hub (SmartFub)	ESIF/ERDF	Oct '18 – Sep '21	£6,724K	PI
Factory In A Box (FIAB)	MTC, GFMA for SmartFub	Jan '19 – Sep '21	£125K	PI
Hybrid Manufacturing	MAZAK, GFMA for SmartFub	Apr '19 – Sep '21	£539K	PI
Laser Micro Processing	LASEA, GFMA for SmartFub	Apr '19 – Sep '21	£475K	PI
Advanced 3D laser processing for surface structuring, texturing and polishing	MTC Scholarship	Oct '19 – Sep '22	£53K	PI
Smart Factory Hub extension & expansion (SmartFub)	ESIF/ERDF	Jul '20 – Jun '23	£4,383K	PI
Laser Micro Drilling for Applications in Zero-Emission Transportation, Low-Carbon Energy and Clean Aerospace	MTC Scholarship	Jun '22 – Nov '25	£62K	PI

Before the move to the University of Birmingham on 1st October 2011.

Principal Investigator/Co-Investigator on more than 55 research grants funded by EC, ERDF, EPSRC, DTI, WAG, TSB, Royal Academy of Engineering with a total budget in excess of £25M as follows:

Title	**Funder**	**Duration**	**Value**
Advanced Robot Assembly	EC ESPRIT	Apr 1995-Mar 1998	£50K
Intelligent Information Systems for the Designer .	British Council ARC project	Jan 1995-Dec 1996	£4K
Virtual Design Studio	EPSRC AIMS	Jun 1996-May 1997	£6K
Rapid Prototyping Centre	ERDF	Apr 1996-Dec 1998	£664K
Knowledge-Based Manufacturing Centre	ERDF	Jul 1996-Dec 1998	£1,116K
Knowledge-Based Sensor Centre	ERDF	Nov 1996-Dec 1998	£350K
Intelligent Product manuals for ISW SMEs	ERDF	Nov 1996-Dec 1998	£350K
Virtual Manufacturing and Rapid Prototyping	EC	Feb 1997-Jan 1998	£19K

Concurrent Engineering Workflow	EC	Jan 1997-Dec 1999	£47K
Handling of Non-Rigid Materials with Robots	EC	Apr 1997-Mar 2000	£67K
Intelligent Product Manuals	EC	Apr 1997-Mar 2000	£59K
Cardiff Research Initiative Funding Rapid Tooling	Cardiff University	1997-1998	£50K
Rapid Production of Tooling	EC Brite-EuRam	Mar 1998-Feb 2000	£145K
Rapid Tooling and Manufacturing	ERDF	Apr 1998-Dec 2001	£1,236K
Cardiff Research Initiative Funding Virtual Reality	Cardiff University	1998-1999	£59K
Innovation in Manufacturing Centre	ERDF	Apr 1998-Dec 2001	£1,989K
Case Studies of Direct Interaction with Virtual Human in Immersive Design Environments	EC EPSRC	Jul 1998-June 2001	49K
Knowledge Discovery in Enterprise Information Management Systems	EC ESPRIT	Nov 1998-Oct 2000	£94K
Innovative Technologies for Effective Enterprises	ERDF	Dec 1998-Dec 2001	£2,333K
Systems Neuroscience and Engineering Research for Anthropomorphic Grasping and Handling	EC Brite-EuRam	Jan 1999-Dec 2001	£136K
MEC Business Development Manager Post	ERDF	Oct 1999-Jan 2002	£187K
Development of Unmanned Control, Monitoring and Diagnosis for diesel power generating systems	Joint British-Korea	Jan 2000 - Dec 2001	£15K
Advanced Rapid Manufacturing Initiative	ERDF	Dec 1999 - Jan 2002	£976K
Wyndham Engineering Ltd.	TCD	Jan 2000 - Jan 2004	£261K
Supporting Rehabilitation of Disabled using Industrial Robots for Upper Limb Motion Therapy	EC IST	Jan 2000 - Jan 2004	£135K
Manufacturing Engineering Centre	WDA CETIC	May 2001 – Apr 2004	£300K
Giroflex	TCD	Jun 2001-May 2004	£261K
Spoken and Written Language in Adaptable Multimedia Documents	ESRC	Jun 2001-May 2004	£328K
Advanced Product Support Technologies (APoST)	EC FP5	Sep 2001-Aug 2003	£61K
Supporting Innovative Product Engineering and Responsive Manufacturing	ERDF	Jul 2001-Dec 2004	£5,331K
Incorporation of New Technologies in the European Precision Foundry Industry	EC	Nov 2001-Oct 2004	£22K
Extension of Technology Transfer Facilities of the MEC	KEF	Jan 2002-Dec 2002	£483K
External Powder Coating of Cans (EpoCan)	EPSRC	Jun 2002-May 2005	£236K
Collaborative Teamwork – Application Service Provider	DTI ICT	Dec 2002 -	£212K

(ASP) for the Foundry Industry (CoTeam)	Carrier	Nov 2005	
Welsh Centre for Manufacturing Excellence	WDA, NAW & DTI	Jul 2002-June 2005	£700K
Micro Tooling Centre (MTC)	ERDF	Nov 2002-Oct 2005	£795K
Tangible Acoustic Interface for Human Computer Interactions (Tai-Chi)	EC	Jan 2004-Dec 2006	£386K
Partnership in Sustainable Development through Product Recyclability, Miniaturisation and Production Waste Reduction (PREMI)	INTERREG IIIB and ODPM	Jan 2004-Dec 2006	£385K
EurAsian network for product lifecycle support and training (EAPSTRA)	EC FP5 IST	Jan 2004-Dec 2005	£48K
Tooling for Non-Silicon Micro Components (µTooling)	CUIMRC (EPSRC)	Jan 2005 – Dec 2007	£608K
Natural Language based decision support in neurorehabilitation (ALLADIN)	EC FP5 IST	Jan 2004 – Dec 2006	£240K
Multi-Material Micro Manufacture (4M)	EC FP6 NMP	Oct 2004-Sep 2008	£1,290K
Additional Management Support for Cardiff University IMRC	EPSRC	Jan 2005 – Dec 2007	£178K
Charged Particle Nanotech (CHARPAN)	EC FP6 NMP	Apr 2005 – Mar 2009	£218K
Micro-Nanosystems European Network pursuing the integration of NMS and ACC in ERA (MINOS-EURONET)	EC FP6 IST	Jun 2005 – May 2008	£24K
Facilities for Micro-machining and micro fabrication of non-silicon components (MicroBridge)	DTI MNT	Sep 2005 – Aug 2010	£5,005K
Provision of focussed ion beam and continuing maintenance and support package for the MicroBridge facility	WDA MNT	Sep 2005 – Aug 2010	£2,572K
Surface Enhanced Micro Optical Fluidic Systems (SEMOFS)	EC FP6 IST	Sep 2005 – Aug 2008	£211K
MicroTechnologies for Re-launching European Machine Manufacturing SMEs (LAUNCH-MICRO).	EC FP6 NMP	Dec 2005 – Nov 2009	£303K
Network of Excellence for the Exploitation of Organic and Large Area Electronics (PolyNet)	EC FP7 ICT	Jan 2008 – Dec 2010	£130K
Access to Nanoscience and Nanotechnology Equipment at Cardiff	EPSRC	Oct 2008-Sep 2012	£539K
Integrating European research infrastructures for the micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire (EUMINAfab)	EC FP7 Infrastructure	Mar 2009 – Feb 2013	€841K
Expansion of the MEC Micro and Nano Manufacturing Facilities	WAG A4B	Nov 2008 – Oct 2010	£314K
Converging technologies for micro systems manufacturing (COTECH)	EC FP7 NMP	Oct 2008 – Sep 2012	€306K
Rolled multi material layered 3D shaping technology (MULTILAYER)	EC FP7 NMP large-scale	Oct 2008 – Sep 2012	€467K
Laser rapid prototyping and tooling solutions (LRPTOOL)	WAG A4B	Nov 2009 – Sep 2010	£301K
Printable, Organic and Large-Area Realisation of Integrated Circuits (POLARIC)	EC FP7 ICT	Jan 2010 – Dec 2013	€965K
Flexible Compression Injection Moulding Platform for Multi-	EC FP7 NMP	May 2010 –	€344K

Scale Surface Structures (IMPRESS)		Apr 2013	
Development of a combinatorial Smart Matrix pro-angiogenic scaffold with micro-structured silicone backing for full-thickness skin reconstruction	TSB	July 2010 – Mar 2011	£38K

Other significant completed research outputs

Keynotes and invited lectures:

1. PLI Conference 2022, 28-29 Jun 2022, St. Etienne, France
2. The 4th International Conference on Smart Materials Technologies (ICSMT 2019), 21-23 Jun 2019, St. Petersburg, Russia
3. Advances in Science and Engineering Technology multi-conferences (ASET'19), 26-27 Mar 2019, Dubai, UAE
4. International Conference on Mechanical, Manufacturing, Modeling and Mechatronics, 22-24 Feb 2019, Nice, France
5. 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018), 10-12 Dec 2018, IIT Bombay, India
6. International Conference on Materials Science and Manufacturing Engineering (MSME 2018), 8-10 November 2018, Paris, France
7. 57th Annual International Conference of Ruse University and the Union of Scientists – Ruse, 25-26 October 2018, Rousse, Bulgaria
8. 2018 International Top-Level Forum on Engineering Science and Technology Development Strategy – Additive Manufacturing, 6-7 September 2018, Xi'an, China
9. EuroNanoForum 2017, 21-23 June 2017, Valletta, Malta
10. 18th International Symposium on Laser Precision Microfabrication (LPM 2017), 5-8 June 2017, Toyama, Japan
11. 9th International Laser Symposium & International Symposium, 23–24 February 2016, Dresden, Germany
12. H2020 Laser Manufacturing Brokerage Event, 11 November 2015, AIMEN Technology Centre,, Porriño – Pontevedra, Spain
13. MTF 70th Scientific Conference of Technical University of Sofia, September 2015, Sozopol, Bulgaria
14. TSB/AILU Industrial workshop "Innovations for economic growth: The UK uptake of Laser Materials Processing", MTC, UK, 8th Jul 2014
15. 9th International Workshop on Micromanufacturing Technology (IWMT 2013), Smart Surface Texturing Technology for ECO/BIO Industries, 4-5 July 2013, Jeju, Korea
16. International Laser Applications Symposium 2013 (ILAS 2013), 12-13 March 2013, Nottingham, UK
17. International Conference on Optoelectronics and Microelectronics (2012 ICOM), 23-25 August 2012, Changchun, China
18. 8th International Workshop on Micromanufacturing Technology (IWMT 2012), Smart Surface Texturing Technology for ECO/BIO Industries, 17 July 2012, Seoul, Korea
19. The 30th International Congress on Applications of Lasers & Electro-Optics (ICALEO 2011), 23-27 October 2011, Disney World Resort, Florida, USA
20. Korea – EU Forum on Micro-Manufacturing, 24 September 2010, Tampere, Finland
21. 2nd Aachen Precision Days Conference, 18-19 May 2010, Aachen Germany

Associate Editor of MDPI Micromachines Journal and MDPI Applied Sciences Journal

Member of the Editorial Boards of the IMechE Journal Part B "Engineering Manufacture", and Bentham Science Journal "Micro and Nanosystems".

PhD students' supervisions

Name	Period	Status	Degree	Topic	Role	% of supervision
LACAN F.	1998-2001	Completed	PhD	Capabilities of the RAPIDTOOL	Co- supervisor	50%

				Process		
GAULT R.S.	1998-2001	Completed	PhD	Stereolitography	Co- supervisor	40%
SETCHI R.	1999-2002	Completed	PhD	Intelligent Product Manuals	Co- supervisor	50%
BIGOT S.	2003-2007	Completed	PhD	Inductive Learning	Co- supervisor	40%
BROUSSEAU E.	2002-2006	Completed	PhD	FIB Machining	Main supervisor	70%
NGUYEN C D	2002-2005	Completed	PhD	Machine Learning	Co- supervisor	50%
TSANEVA D.	2003-2007	Completed	PhD	Product Lifecycle Management	Co- supervisor	50%
DOBREV T.	2003-2007	Completed	PhD	Laser Milling	Co- supervisor	50%
IVANOV A.	2002-2007	Completed	PhD	Micro EDM	Co- supervisor	30%
Pasantonopoulos C.	2003-2007	Completed	PhD	Intelligent Product Manuals	Co- supervisor	40%
CHARMEUX J. F.	2006-2009	Completed	PhD	Micro casting	Main supervisor	50%
LAGOS N.	2005-2009	Completed	PhD	FIB Machining	Co- supervisor	40%
SHA B.	2006-2007	Completed	MPhil	Micro Injection Moulding	Co- supervisor	50%
GRIFFITHS C. A.,	2006-2010	Completed	PhD	Micro Injection Moulding	Main supervisor	80%
VELKOVA V. L.	2007-2011	Completed	PhD	FIB Machining	Main supervisor	80%
REES A.	2006-2011	Completed	PhD	Micro EDM	Main supervisor	80%
ELKASEER A.M.	2008-2011	Completed	PhD	Micro Milling	Co-supervisor	50%
PETKOV P.V.	2006-2011	Completed	PhD	Laser Milling	Co-supervisor	50%
SCHOLZ S. G.	2008-2011	Completed	PhD	Micro Injection Moulding	Main supervisor	70%
VELLA Pierre	2009-2015	Completed	PhD	Micro Manufacturing	Main supervisor	80%
MINEV E.	2009-2012	Completed	PhD	Precision Casting	Co- supervisor	50%
WILLIAMS E.	2010-2014	Completed	PhD	Laser Machining	Co- supervisor	20%
OMAR F.	2009-2014	Completed	PhD	Micro replication	Co- supervisor	20%
PENCHEV P.	2012-2016	Completed	PhD	Laser Micro Processing	Main supervisor	70%
JWAD T.	2014	Completed	PhD	Laser Micro Processing	Main supervisor	80%
HARRIS C.	2014	Completed	PhD	Tribology	Co- supervisor	20%
BURATIN S.	2014	Completed	PhD	Laser Micro Processing	Co- supervisor	20%
REBEGEA S.	2014	Completed	PhD	Laser Micro Processing	Co- supervisor	20%
NASROLLAHI V.	2015	Completed	PhD	Laser Micro Processing	Main supervisor	80%
ROMANO JM	2016	Completed	PhD	Laser Micro	Main	80%

				Processing	supervisor	
GIRON A. G.	2016	Completed	PhD	Laser Micro Processing	Main supervisor	80%
BATAL A.	2016	Completed	PhD	Laser Texturing	Primary supervisor	80%
MICHALEK A.	2017	Completed	PhD	Laser Texturing	Primary supervisor	80%
MEHMETI A.	2018	Completed	PhD	Hybrid Manufacturing	Primary supervisor	80%
DIM E.	2018	Mid-supervision	PhD	Hybrid Manufacturing	Primary supervisor	80%
Karkantonis T.	2019	Mid-supervision	PhD	Laser Micro Structuring	Primary supervisor	80%
Le H.	2019	Mid-supervision	PhD	Laser Micro Structuring	Primary supervisor	80%
Dilmy D.	2022	Mid-supervision		Hybrid Laser Micro processing	Primary supervisor	80%

Research Impact

Bibliometric data: 7141 total citations, h-index 39 (Google Scholar, 17th June 2022)

Knowledge Exchange

- Workshop on “Laser Surface Functionalisation”, June 2011, KIMM, Korea;
- Workshop on “Concurrent Material and Process Design: Convergence of “Top-down” and “Bottom up” Approaches, 18 July 2012, Seoul, Korea;
- 4M2020 Foresight Forum on “Application Pull” and “Technology Push” Challenges and Opportunities in 5 to 7 Years’ Horizon, 9-11 September 2014, Grenoble, France
- Workshop on “Laser processing for micro and nano-scale manufacturing: technology and application advances” organised jointly with AILU, 17 September 2014, UoB, UK
- Industrial workshop on “Higher Value production technologies and KET enabled applications”, 30 March 2015, Milano, Italy
- Industrial Workshop on “Optical Measurement of Engineered Surfaces”, 6 July 2016, UoB, UK
- 4M2020 Workshop on “Micro and Nano Manufacturing: H2020 Pilot and FoF Activities 2017”, 12 September 2016, Copenhagen, Denmark
- Virtual Workshop on "Advanced Manufacturing for Millimeter-Wave and Sub-THz Space Payloads", 15 June 2020
- AILU Workshop on Laser Surface Texturing, 19 May 2022, Cranfield, UK

Principal research publications in the last three years

1. Le H., Pradhani C., Penchev P., Nasrollahi V., Karkantonis T., Wang Y, Stefan Dimov; de-Campos J. A. R. (2022) Laser precession machining of cross-shaped terahertz bandpass filters, Optics and Lasers in Engineering, Vol. 149 (accepted)
2. Batal A., Michalek A., Penchev P., Kupisiewicz A., Dimov S. (2020) Laser processing of freeform surfaces: A new approach based on an efficient workpiece partitioning strategy, Int. J. of Machine Tools and Manufacture, Vol. 156, 103593
3. Michalek A., Qi S., Batal A., Penchev P., Dong H., See T. L., Dimov S. (2020) Sub-micron structuring/texturing of diamond-like carbon coated replication masters with a femtosecond laser, Applied Physics A, Vol. 126: 144
4. Romano J.-M, Garcia-Giron A., Penchev P., Gulcur M., Whiteside B.R., Dimov S. (2020) Lotus-leaf inspired surfaces: hydrophobicity evolution of replicas due to mechanical cleaning and tool wear, ASME J. of Micro and Nano Manufacturing, Vol. 8, 010913-1

5. Enterprise, Engagement and Impact

Successful collaborations with major international or major national research teams or institutions

National and international collaborations that led to joint externally funded projects after my move to Birmingham in September 2011:

- **Korean Institute of Machinery & Materials (KIMM), University of Illinois - Urbana-Champaign and Northwestern University (USA)** in R&D project funded by Korea Government on the topic of "Laser-Based Modules for Functional Surface Texturing: Integration and Process Design Issues", 2011-2015;
- **MULTITEL ASBL and SIRRIS (Belgium), VITO (Netherlands), Cardiff University and Karlsruhe Institute of Technology (KIT)** in the "ECO-efficient LASER technology for FACTories of the future (ECO-LASERFACT)" project funded by the INTERREG IVB North West Europe programme, 2012-2015;
- **TranscenData Europe Limited (UK), TNO (Netherlands), Fcubic AB and Swerea IVF AB (Sweden)** in the FP7 FoF project "High performance Production line for Small Series Metal Parts" (HYPROLINE), 2012 – 2015;
- **KIT and Fraunhofer IPA (Germany), NPL and Cardiff University (UK), Philips Research Europe (Netherlands), Commissariat à l'Energie Atomique (CEA) (France), Centro Ricerche FIAT S.C.p.A. (Italy), Kungliga Tekniska Högskolan (Sweden), IK4-TEKNIKER (Spain), IMS Nanofabrication AG (Austria), Trinity College Dublin (Ireland) and Vrije Universiteit Brussel (Belgium)** in the FP7 project "Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire" (EUMINAfab), 2012-2013;
- **Cardiff University** in the EPSRC project "Laser machining of passive micro wave components and bulk metallic glasses", 2013
- **IK4-TEKNIKER (Spain), Flann Microwave Ltd (UK), Danmark Tekniske Universitet (DTU) and ORTOFON AS (Denmark), Association Pole Europeen De Plasturgie (PEP) and FLOWDIT SAS (France), ALICONA IMAGING Gmbh, WITTMANN BATTENFELD Gmbh and RHP-TECHNOLOGY Gmbh & Co KG (Austria)** in the FP7 project "High throughput integrated technologies for multimaterial functional Micro Components" (HINMICO), 2013-2016;
- **C-Tech Innovation Ltd (UK), FOTEC Gmbh (Austria), KIT, PEP, TEKNOLOGIAN TUTKIMUSKESKUS VTT (Finland) and CEA** in the FP7 CSA project "Advanced Manufacturing of Multi-Material Multi-Functional Products towards 2020 and Beyond" (4M2020),
- **M-Solv Ltd (UK)** in the InnovateUK project "Laser Enabled Advanced Printing" (LEAP), 2014;
- **Caterpillar and Yamazaki Mazak (UK)** in a industry funded project "Laser Based Hybrid Remanufacture of Complex High Performance Parts" (Laser-Reman), 2015-2017;
- **BSH Electrodomésticos España s.a. and Universidad Politécnica de Madrid (Spain), EADS Deutschland GmbH, Bosch and Fraunhofer IWS (Germany), Universiteit Twente (Netherlands), Centre Technologique Alphanov (ALPHANOV) (France) and Consiglio Nazionale Delle Ricerche -Institute for Photonics and Nanotechnologies (CNR-IFN)** in the H2020 ITN project "European ESRs Network on Short Pulsed Laser Micro/Nanostructuring of Surfaces" (LASER4FUN), 2015-2019;
- **SDA and KIMM (Korea)** in the KIAT project "Laser Machining of Ceramic Interface Cards for 3D wafer bumps", 2015-2018;
- **IPC, CEA, III-V Lab, Alstom Transport SA and Altair (France), OBE and EOS (Germany), Centro Ricerche FIAT S.C.p.A. and GEMMATE (Italy)** in the H2020 project **"**Modular laser based additive manufacturing platform for large scale industrial applications" (MAESTRO), 2016-2019;
- **MTC and a number of their industry members, i.e. GF, IPG Photonics and Renishaw** in a joint PhD programme with currently two ongoing projects in 3D Laser Texturing and Hybrid Manufacturing, 2017-2021;
- **IPC, CEA-LITEN and Albéa Services SAS (France), Agie Charmilles New Technologies SA (Switzerland), Centro Ricerche Fiat SCPA (Italy), Alicona Imaging GmbH (Austria) and EUROORTODONCIA S.L. (Spain)** in the H2020 project "High-Impact Injection Moulding Platform for mass-production of 3D and/or large micro-structured surfaces with Antimicrobial, Self-cleaning, Anti-scratch, Anti-squeak and Aesthetic functionalities" (HIMALAIA), 2017-2020;

- **Indian Institute of Technology Bombay (IITB)** in the UKIERI-DST project "Surface functionalisation for food packaging and healthcare applications", 2018-2020;
- **Yamazaki Mazak, MTC and DMG-MORI (UK) and LESEA (Belgium)** in co-funded ESIF programme "Smart Factory Hub" (SmartFub) that targets assisting 250 SMEs in West Midlands, 2018-2023.

Many more successful collaborations in 55 research grants funded by EC, ERDF, EPSRC, DTI, WAG, TSB, Royal Academy of Engineering before my move to Birmingham

6. Leadership and Management

School/College/University

School level:

- Head of AMTC and MRG (from 2012);
- Member of the School Research Committee as the Head of AMTC and MRG (from 2012);
- Head of QAA with responsibilities for the School Annual PGR, PGT and UG programme reviews (Sep 2013 to May 2016)
- Member of the School Educational Committee as Head of QAA (Sep 2013 to May 2016)
- Member of the School Student-Staff Committee as Head of QAA (Sep 2013 to May 2016)

Member of the College Quality and Accreditation Committee as Mech Eng Head of QAA (Sep 2013 to May 2016)

Member of the University Research Progress & Awards Sub Panel (from Sep 2016 to date)

Establishing, leading, and developing research centres of international and national importance

Before my move to Birmingham in 2011, I established and then led the micro manufacturing and additive manufacturing activities of the MEC in Cardiff from 1996 to 2011. The Centre established these activities by securing 55 research grants funded by EC, ERDF, EPSRC, DTI, WAG, TSB, Royal Academy of Engineering attracting in excess of £25M. The PDRs and PGRs working on these grants were in the range from 20 to 25 and 25 to 30, respectively, during all years in the period from 1998 to 2011. These are some examples of track record in managing large international and national research grants:

- **FP6 Network of Excellence "Multi-Material Micro Manufacture" (4M) - duration 4 years (Oct 2004-June 2009) and a total budget of 7.5 M€.** Responsible as a Network Director for the establishment of the 4M European Centre of Excellence. 137 researchers and 88 PhD students organised into eight technology and application divisions are involved in the 4M Joint Programme of Activities. The Centre integrates facilities and creates synergistic links to on-going R&D programmes in Europe with total values exceeding 110 M€ and 66 M€, respectively. Currently, an Executive Board Member of the self-sustained 4M Association (www.4m-association.org).
- **Co-Director of EPSRC funded Cardiff University IMRC (GR/S75505) – duration 5.5 years (Aug 2004 – Jan 2010), £3.5M (pre-fEC), Industry in-kind = £914K, Industry cash = £246K.** The CUIMRC has directly supported 11 research projects (including 4 large, multi-stream Flagships), involving 12 academics, 3 RCUK Academic Fellows, 6 visiting fellows, 25 research staff, 17 PhD candidates (including 9 staff). CUIMRC has formally partnered with 43 industry, 4 policy and 7 trade body end users and 9 university / research organisations. CUIMRC also acts as a hub for a wider research and development portfolio including further R&D funding from EPSRC, DfT, TSB, WAG, EU plus executive training, KTPs and DMAS funded industry support.
- **DTI/WDA MNT Project "Facilities for Micro-machining and micro fabrication of non-silicon components" (MicroBridge) – duration 4.5 years (Sep 2005-Jan 2010) and a total budget of £7,577K.** Responsibility to co-ordinate the establishment of Cardiff's note in the UK MNT Network.
- **EPSRC Project "Access to Nanoscience and Nanotechnology Equipment at Cardiff" (Nanoaccess@Cardiff) – duration 4 years (Oct 2008 – Sep 2012) and total budget of £539K.**
- **Member of the Executive Board and leading the joint research activates of European Infrastructure in Micro and Nano Manufacturing, EUMINAfab – duration 4 years (Mar 2009 – Feb 2013), funded by the EC, total budget €7.7M, the MEC share - €956K.** The FP7 infrastructure programme brings together 8 major research infrastructures in Europe (NPL Management Limited,

KIT, Centro Ricerche FIAT S.C.p.A., Philips Research Europe, IMS Nanofabrication AG, CEA and Tekniker).

After moving to Birmingham in September 2011 I established the Advanced Manufacturing Technology Centre (AMTC) at the School of Mechanical Engineering in 2012 and then I led it until the end of 2015. The AMTC consist of 10 academics with activities/interests spread over five active research themes/groups encompassing Advanced Machining, Micro Manufacturing, Hybrid Manufacturing, Automation and Intelligent Manufacturing and Geometrical Modelling. The AMTC Micro Manufacturing and Hybrid Manufacturing groups was established in 2012 and 2013, respectively and since then led by me. For the relatively short period, the two group established themselves as internationally and nationally leading and had attracted in access £15M through a series of national and international grants. Currently, the two groups bring together 5 academics, 8 RFs/RAs and more than 15 PhD students.

Currently, I lead the Manufacturing Research Group (MRG) of the School of Engineering that brings together 17 academics, 15 PDRs, 61 PGRs and 2 technicians and has a portfolio of research grants in excess of £15M. The MRG strategy was developed to build upon the long tradition of excellence in manufacturing technology research in Birmingham. The aim is to establish MRG as world-leading in new emerging cross-theme manufacturing areas, e.g. hybrid additive and subtractive manufacturing, product miniaturisation and function integration, autonomous remanufacturing, micro/nano fabrications and digital manufacturing. I have secured funding from 2 FP7 and 3H2020 programmes to establish the activities in the above listed areas that have culminated in the ESIF SmartFub project (£11.2M) that involves all MRG academics. I am the SmartFub Project Director with responsibilities to establish mutually beneficial R&D activities with 6 multinational companies for the benefits of SMEs in West Midland, especially to assist 250 SMEs, develop 30 new products for those companies and also developing 10 new products to the market.

International Research Leadership:

- 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) and European Infrastructure in Micro and Nano Manufacturing, EUMINAfab.

7. Citizenship

External Engagement

- Member of the Peer Review Colleges of the UK, Enterprise Ireland, the Italian and Flanders Research Councils, QNRF and an expert reviewer for the European Commission in the area of advanced manufacturing.
- Member of the following peer review bodies:
  - EPSRC Peer Review College;
  - Peer Review College of Italian Ministry of Education, University and Research (REPRISE)
  - Advisor/expert of KU-Leuven for its Industrial Research Fund (IOF);
  - Qatar National Research Fund Qatar National Research Fund;
  - Research Grants Council (RGC) of Hong Kong
  - Slovenian Research Agency;
  - Slovak Research Agency;
  - Central Finance and Contracting Agency (CFCA) of the Republic of Latvia;
- External Examiner at Trinity College, Dublin for their “Engineering with Management B.Sc. (Ing.)” course for the period from 2006 to 2009.
- External Assessor in reviewing executive master programme in Advanced Manufacturing at University of Jeddah, Saudi Arabia.
- EC expert reviewer in Advanced Manufacturing and Industrial Photonics and Panel Member of the FP7 Support unit.
- 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); 4M2011 in Stuttgart (Germany); 4M2012 in Vienna (Austria); 4M2013 in San Sebastian (Spain); 4M/ICOMM 2015 in Milano (Italy); 4M/IWMF 2016 in Copenhagen; WCMNM 2018 in Portoroz, Slovenia; WCMNM 2019, Raleigh, NC, USA; WCMNM 2021, IIT Bombay, Mumbai, India; WCMNM 2022, KU-Leuven, Belgium

- External Assessor of undergraduate teaching in the Department of Mechanical Engineering, Imperial College London, March-April 2014.
- Appointed as one of 22 Mentors of Korean Innovation Centre – Europe to help create long lasting economic partnerships between South Korea and the EU, 17 Feb 2015.
- Active involvement in the UK Association of Industrial Laser Users (AILU) by hosting and contributing to AILU Micro-Nano Annual Workshops.
- Academic leader of nonconventional machining theme at the MTC and supervising 4 joint PhD projects with them.

APPENDIX: Professor Stefan Dimov's publications, May 2022

Journal papers

1. Karkantonis T., Gaddam A., Tao X., See T. L.; Dimov S. (2022) The influence of processing environment on laser-induced periodic surface structures generated with green nanosecond laser, Surfaces and Interfaces (accepted)

2. Jimenez A., Bidare P., Mehmeti A., Li S., Garman C., Dimov S., Essa K. (2022) High-Density Direct Laser Deposition (DLD) of CM247LC Alloy: Microstructure, Porosity and Cracks, Int. Journal of Advanced Manufacturing Technology (accepted)

3. Baronti L., Michalek A., Castellani M., Dimov S. (2022) Artificial Neural Networks Tools for Predicting the Functional Response of Ultrafast Laser Textured/Structured Surfaces, Int. J. of Advanced Manufacturing Technology (accepted)

4. Le H., Pradhani C., Penchev P., Nasrollahi V., Karkantonis T., Wang Y, Stefan Dimov; de-Campos J. A. R. (2022) Laser precession machining of cross-shaped terahertz bandpass filters, Optics and Lasers in Engineering, Vol. 149 (accepted)

5. Freer S., Sui C., Penchev P., Dimov S., Gorodetsky A., Hanham S. M., Grover L. M., Navarro-Cía M. (2021) Hyperspectral terahertz imaging for human bone biometrics, SPIE Proceedings, Vol. 11827, Terahertz Emitters, Receivers, and Applications XII; 118270T

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7. Gaddam A., Sharma H., Ahuja R., Dimov S., Joshi S., Agrawal A. (2021) Hydrodynamic drag reduction of shear-thinning liquids in superhydrophobic textured microchannels, Microfluidics and Nanofluidics (accepted)

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14. Michalek A., Batal A., Qi S., Penchev P., Bruneel D., See T. L., Dimov S. (2020) Modelling ultrafast laser structuring/texturing of freeform surfaces, *Applied Surface Science Advances, Vol.2*, 100036

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