



The International Academy for Production Engineering

NEWSLETTER

N° 57 – Autumn 2018

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From the President

Dear CIRP Colleagues,

It is a great privilege and honour for me to take on the responsibility of President of CIRP, The International Academy for Production Engineering, for the year 2018-2019. I wish to thank the CIRP Senate and the CIRP members who gave me their confidence to guide our academy for one year. I express thanks to the Board and Council of our Academy, and especially to my predecessor, Professor Don Lucca, who left the Academy in very good shape, addressing many sensitive issues and providing vision for the future. I appreciated our close relationship within the Board and in many other committees in the past years. I thank him in advance for his support during the coming period, and look forward to having an efficient work within the Board with him, as well as with Professor Mitsubishi serving as Vice President and Professor Hansen as Vice President Elect.



The 68th CIRP General Assembly in Tokyo was definitely a high-level event, with intensive papers and technical sessions, and relaxing social events. I am sure that everyone still has in mind this very special Opening Ceremony, where we were greatly honoured by the presence of Their Imperial Majesties. This General Assembly was professionally organized and well attended with more than 600 participants. On behalf of all CIRP members, I would like to sincerely thank Professor Mitsubishi and his team once more for organizing this great event. We will meet next year in Paris and then in Birmingham. I already had the opportunity to exchange with Prof. Roy and his colleagues about details of the meeting in Birmingham. I am really confident that the next CIRP General Assembly will be an exciting event.

In the continuity of decisions carried out by the Board and Council and supported by Fellows, several issues were addressed during this year. The change in the procedure for renewal of Associate Members and candidatures for Fellow voted a couple of years ago is now well accepted. The Board worked with the Communication Committee on the crucial issue of clarifying the tagging of the CIRP Annals as “journal papers”, in particular in the Web of Science. Our efforts and discussions with Elsevier and Clarivate were fruitful and this problem seems to be fixed now. We are also all waiting for receiving the first impact factor of the CIRP Journal of Manufacturing Science and Technology.

The Research Affiliate program significantly contributes to the recognition of our Academy. We worked with the Board to provide Research Affiliates with a clear framework for a better integration within CIRP and a clear procedure for their recruitment. The decisions taken by the Council were approved by CIRP members and well received by Research Affiliates; they are now part of our Internal Regulations.

Apart from these modifications, our internal regulations were carefully updated to make the latest rules and procedures clear for Fellows, Associate Members and Research Affiliates, removing any ambiguity that may have appeared.

Now, as mentioned by our past President in his presidential address in Tokyo, “CIRP is a working Academy”, with intensive work among members within STCs, and in that sense our contributions to the “outside world” must be of increasing significance. The STCs give

directions for future developments in production engineering. In particular, the establishment of Cross STC Collaborative Working Groups is essential to address future perspectives. A Cross STC Collaborative Working Group on additive manufacturing was initiated last year, another one dedicated to biologicalisation of manufacturing will start next February. These two topics are part of the Industry 4.0 paradigm. Beyond this, CIRP must also contribute to provide an integrated vision of emerging fields, in terms of scientific involvement, development of economic value, societal impact, sustainability, but also educational aspects.

Finally, CIRP would not be such a leading academy without our secretariat team, Chantal and Agnès, and the commitment of our colleague Professor Bert Lauwers, Technical Secretary of our Academy. Let me address my sincere thanks to them for their support and outstanding work.

I will do my best in serving you in this coming year. The CIRP Winter Meetings in Paris are rapidly approaching. I look forward to meeting you there.

With warm regards,

Didier Dumur
President of CIRP 2018-2019

From the editor

Dear CIRP colleagues,

It is a pleasure to present the next CIRP newsletter.

Besides the well used CIRP website (www.cirp.net), the newsletter brings any kind of news from CIRP members and for CIRP members.

All kind of news (news from members, awards, books written by members,...) relevant for our CIRP academy, is always welcome. Organizers of CIRP conferences are invited to send a small report (high lights, pictures,..) that can be published in the newsletter. Input can be sent to the CIRP office (cirp@cirp.net) or directly to me (bert.lauwers@kuleuven.be).



Bert Lauwers
CIRP Technical Secretary

News about Members

Professor Hendrik Van Brussel received the “Euspen Life Time Achievement Award 2018”

During euspen’s 18th International Conference and Exhibition in Venice (Italy), **Prof. Hendrik Van Brussel** received a Life Time Achievement Award. Lifetime achievement awards are presented at the annual event to engineers and scientists who have made outstanding contributions to the development and growth of one or more aspects of the ultra-precision technologies: high precision engineering; micro-engineering; nanoscience, and nanotechnology.



Euspen has recognised Prof. Van Brussel’s huge influence on the precision and micro engineering community. The Euspen society would not only like to officially acknowledge his contributions, but to thank him for the advances made in the field which are a result of his dedication and commitment to pushing the boundaries of technological advancements.

<https://www.euspen.eu/euspen-lifetime-achievement-award-prof-hendrik-van-brussel/>

Dr. Ömer Sahin Ganiyusufoglu received the very prestigious „Friendship Award“ of Chinese Government

Dr. Ö.S. Ganiyusufoglu received the very prestigious „Friendship Award“ of Chinese Government. Prior to the Chinese National Day the award was handed over by the Vice Premier Liu He. The day after, the laureates were accepted by Prime Minister Li Keqiang. In total 50 experts from 21 countries received the award for their long time contributions to the development of China and for establishing friendship.



http://english.gov.cn/premier/news/2018/09/30/content_281476325038026.htm

http://www.xinhuanet.com/english/2018-09/29/c_137502353.htm

Professor Jack Jeswiet received the 2018 Society of Manufacturing Engineers Albert M Sargent award

Professor Jack Jeswiet received the 2018 Society of Manufacturing Engineers Albert M Sargent award at the 2018 SME International Awards Gala in Boston. The citation read by LaRoux K. Gillespie, the Society of Manufacturing Engineers past President (2012) reads: “The following is in recognition of a notable manufacturing influencer, Dr. Jacob “Jack” Jeswiet, this year’s SME Albert M. Sargent Progress Award winner”.

“As a professor of Engineering and Applied Science in the Mechanical and Materials Engineering Department at Queen’s University at Kingston, Dr. Jeswiet has made a variety of key contributions to the manufacturing sector resulting in significant technical advancements in production operations, particularly his work in die-less forming and rolling. He has further extended his contributions in manufacturing by laying the foundation for lifecycle engineering. His efforts have led to the clarification of an important terminology in the field and the illustration of the core concepts in the context of lithium-ion-battery recycling and mining system evaluation. Dr. Jeswiet's works have been well cited in the field due to their innovation and practical relevance”. The SME Albert M Sargent award recognizes significant accomplishments in the field of manufacturing processes, methods or systems.



Jeffrey M. Krause SME executive director; LaRoux K. Gillespie (FSME) Past President SME (2012); Jack Jeswiet (FSME), Professor Queen's University at Kingston; Tom Kurfess (FSME) President SME 2018.

Professor John Sutherland received the 2018 SME Gold Medal

Professor John W. Sutherland, the Fehsenfeld Family Head of Environmental and Ecological Engineering (EEE) at Purdue University, recently received the 2018 SME (Society of Manufacturing Engineers) Gold Medal at the SME International Awards Gala in Boston, MA. Prof. Sutherland was recognized with the SME Gold Medal for his significant contributions to the manufacturing engineering profession through his research, published literature, lectures, and technical communications – and notably his pioneering efforts to establish the field of sustainable manufacturing. The SME Gold Medal was first awarded in 1955 and is one of the most prestigious awards in manufacturing.

<https://engineering.purdue.edu/EEE/AboutUs/News/2018/sutherland-sme>



(left to right): Jeff Krause (SME CEO), Robert Ivester (Director of the Advanced Manufacturing Office, Office of Energy Efficiency and Renewable Energy), John W. Sutherland (Professor and Fehsenfeld Family Head, Environmental and Ecological Engineering), and Thomas Kurfess (SME President, Professor, Georgia Tech)

Prof. G. Levy recognized for his work on Additive Manufacturing

Prof. G. Levy has been selected for the AMUG Innovators Award (<http://www.amug.com/newsletter/amug-newsletter-october-2018/>).

In addition, he has been recognised by the Rapid Tech – Fabcon 3.D for his pioneering work in the area of Additive Manufacturing

(https://www.rapidtech-fabcon.com/news-press/press-releases/details/3d_printing_pioneers_set_to_return_to_erfurt.html)



Professor Waguih ElMaraghy was honoured as a founding member of the Design Theory and Methodology Committee of the ASME

Professor Waguih ElMaraghy was honoured as a founding member of the Design Theory and Methodology Committee of the American Society of Mechanical Engineers at its conference last week in Quebec City. The Design Theory and Methodology conference promotes research, dissemination of knowledge, and debate in topics including scientific theories of design, creativity and innovation in design, formal design methods, product modeling, design pedagogy, and design management.

<http://www.uwindsor.ca/dailynews/2018-09-04/design-theory-group-recognizes-uwindsor-prof-founder>



Prof. Waguih ElMaraghy accepts congratulations from Kate Fu, vice-chair of the ASME Design Theory and Methodology Committee, for his 30 years of activity with the group.

Prof. Kamlakar Rajurkar of the University of Nebraska-Lincoln was honored by ASME and SME

Prof. Kamlakar Rajurkar was honored by The American Society of Mechanical Engineers (ASME) and The Society of Manufacturing Engineers (SME). Prof. Rajurkar, an ASME Fellow, received the 2018 M. Eugene Merchant Manufacturing Medal of ASME/SME for his pioneering contributions to enhance the productivity of nontraditional machining processes used in automobile, aerospace and medical device manufacturing, including electrical discharge machinery and electrochemical machining at macro, micro and nanoscales, through extensive research in process modeling and in sensing and control techniques.

The award, established in 1986 by ASME and SME, was established to honor individuals who have played a significant role in improving the productivity and efficiency of the manufacturing operation. The medal was presented to Rajurkar on Nov. 12, at the ASME Honors Assembly held in conjunction with the Society's 2018 International Mechanical Engineering Congress and Exposition, in Pittsburgh.



<https://www.asme.org/events/imece/program/awards/honors-assembly>

Prof. Paulo Martins receives honorary doctorate from DTU

Professor Paulo Martins from Instituto Superior Técnico, University of Lisbon has received an honorary doctorate from the Technical University of Denmark (DTU) at its commemoration day 4th May 2018 in recognition of his outstanding contributions to research and development within manufacturing engineering with special focus on metal forming and joining processes. In the nomination of Professor Martins is mentioned his unique combination of strong experimental skills and deep theoretical insight and his ability to perform advanced numerical modelling. His work includes development of new manufacturing processes and sophisticated modelling and testing of material properties developing new, ingenious test methods. His more than 200 refereed journal publications have placed him among the most notable researchers in his field.

Professor Martins first visited DTU in 1996. This led to an intensive collaboration with Professor Niels Bay's research group on Metal Forming and Joining with numerous joint research projects and exchange of master- and PhD-students as well as staff members. One result of this is more than 70 joint international publications. He has furthermore been an invaluable support to one of our spin-off companies Swantec, provider of the state-of-the-art code SORPAS® on resistance welding.



From the awarding ceremony: right Professor Paulo Martins, middle: Professor Anders Bjarklev, Rector of DTU, left: Professor Niels Bay.

CIRP Awards

F.W. Taylor Medal 2018

As an incentive for scientific work, CIRP has instituted the Frederick Winslow Taylor Medal of CIRP - a distinction for young scientists.

Candidates for the award must have personally presented their research at a Paper Session during the two years preceding their nomination. Recipients are not to be over 35 years of age in the year of the presentation of their paper.

The F.W. Taylor Medal 2018 has been awarded during the General Assembly (Tokyo, Japan) to **Dr. Markus Zeis**, upon the proposal of Prof. Fritz Klocke. He presented a paper on "Deformation of thin graphite electrodes with high aspect ratio during sinking electrical discharge machining" at the STC-E during the CIRP General Assembly in Lugano, Switzerland, in 2017.

This paper presents a first comprehensive and multi-disciplinary novel approach for simulation of the sinking electrical discharge machining process. A simulation model has been developed which allows time-dependent calculation of heating and deformation of thin-walled graphite electrodes with high aspect ratios. As a result of this, geometrical errors due to electrode deformation, caused by heating up and highly accelerated movements can properly be estimated and avoided. Although this research is not complete as follow up research and additional validation is required, the presented research is certainly novel, as it is the first time that such detailed and precise models have been developed to calculate the deformation of EDM tool electrodes.

After having worked for several years at the Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University, Dr. Zeis is currently group leader EDM, ECM and Waterjet Machining at the Fraunhofer Institute for Production Technology (IPT). In 2017, he obtained his PhD from the RWTH Aachen. Prior to his paper in the CIRP Annals in 2017, he is author/co-author in more than 25 papers, published/presented in journals and conferences.



Taylor Medal Award ceremony

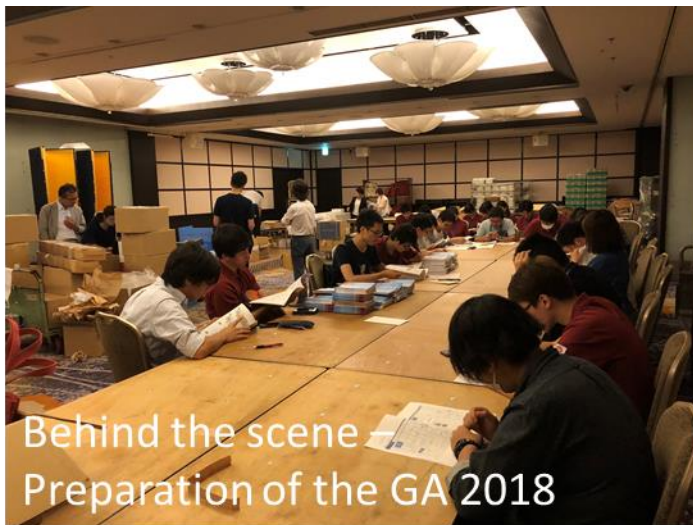
General Assembly 2018

The General Assembly 2018 held in Tokyo, Japan, has been attended by 632 participants, including 91 accompanying persons. Thanks to the Japanese delegation for the excellent organisation.

Pictures, taken by the organising committee, can be downloaded from:

<https://www.cirp.net/component/content/article/109-dashboard/cirp-office/956-photos-from-gas.html?Itemid=529>

Some additional pictures taken:



The General Assembly Meeting



Prof. D. Lucca
hands over
the president ship to
Prof. D. Dumur



The Accompanying Persons Program

(by Catherine Dumur)

Sunday, August 19, 2018 | Welcome reception - Keio Plaza Hotel



Monday – August, 20 (afternoon) | Tokyo and traditions, Asakusa area



At the entrance

Senso-ji temple



Is he lucky?

Tuesday – August, 21 | Japanese experiences

Morning (Yukata wearing experience) or Hokusai Museum



The Edo-Tokuy Museum (all together) : To experience and learn about various aspects of earlier Tokyo



And after lunch, the tea ceremony



To continue, a cruise on the Sumida River



Wednesday, August 22 | Mont Takao (599 m)



Thursday, August. 23 | Kamakura

The Great Buddha (13m high, 121 tons)



After lunch - a walk near the Pacific Ocean



Visit of the Houkokuji Temple and its garden



Friday, August, 24 | Sankei-en Garden...



...and a cruise in Yokohama Bay



A view from Tokyo



ELECTIONS by the General Assembly 2018

20018-2019 Board and Council members

President	Prof. D. Dumur
Vice President	Prof. M. Mitsuishi
Vice President Elect	Prof. H. Hansen
Past President	Prof. D. Lucca
Secretary General Treasurer	Prof. D. Dumur
Technical Secretary	Prof. B. Lauwers
Council Members	Prof. T. Aoyama
	Prof. J. Aurich
	Prof. A. Balsamo
	Prof. C. Evans
	Prof. S. Kara
	Prof. E. Lutters

Fellows

- Prof. P. Arrazola (Spain)
- Dr. H. Haitjema (Netherlands)
- Prof. A. Okada (Japan)
- Prof. K. Wegener (Switzerland)
- Prof. S. Melkote (USA)
- Prof. N. Michailidis (Greece)
- Prof. R. Söderberg (Sweden)

Honorary Fellows

- Prof. E. Brinksmeier (Germany)
- Prof. F. Klocke (Germany)

Fellows Emeritus

- Dr. D. Dauw (Switzerland)
- Prof. T. Kjellberg (Sweden)
- Prof. K. Jemielniak (Poland)
- Prof. J. Jeswiet (Canada)
- Prof. D. Williams (UK)
- Prof. G.X. Zhang (China)
- Prof. J.Y. Zhu (China)

Associate Members

in February 2018:

- Prof. O. Battaïa (France)
- Prof. B.L. Kinsey (USA)
- Dr. E. Mermoz (France)
- Dr. D. Meyer (Germany)
- Dr. A. Valente (Switzerland)
- Dr. X.D. Zhang (China)

in August 2018:

- Dr. S.T. Hong (Korea)
- Dr. A. Liu (Australia)
- Dr. R. Vrabic (Slovenia)
- Dr. Z. Wang (Japan)

Corporate Members

- Aikoku Alpha Corporation (Japan)
- ANCA (Australia)
- CFK Valley (Germany)
- Fritz Studer (Switzerland)
- Fusion Coolant Systems (USA)
- Okuma Corporation (Japan)
- RhySearch (Switzerland)
- Rotem Industries (Israel)
- Tornos (Switzerland)
- Zeeko (UK)
- Zygo Corporation (USA)

Research Affiliates

in February 2018:

- Dr. A.M. Abdelhafeez (UK)
- Dr. D. Bhaduri (UK)
- Dr. Y.L. Chen (China)
- Dr. T. Clausmeyer (Germany)
- Dr. G. Genta (Italy)
- Dr. S. Gies (Germany)
- Dr. B. Haefner (Germany)
- Dr. D.H. Kim (Korea)
- Dr. Z. Liao (UK)
- Dr. Y. Liu (UK)
- Dr. A. Malakizadi (Sweden)
- Dr. M. Peterek (Germany)
- Dr. B. Schleich (France)
- Dr. F. Schultheiss (Sweden)
- Dr. T. Taylor (Japan)

in August 2018:

- Prof. A.-L. Andersen (Denmark)
- Dr. E. Bosch (Germany)
- Dr. E. Bracquene (Belgium)
- Dr. W. Ji (Sweden)
- Dr. H.-T. Lee (Korea)
- Dr. E. Simonetto (Italy)
- Dr. Z. Tong (UK)
- Dr. F. Zanini (Italy)
- Dr. Y. Zhang (France)

STC Officers (Chair - Vice-Chair - Secretary)

- **STC C** - Profs. D. Biermann – S. Melkote – P. Arrazola
- **STC Dn** - Profs. R. Stark – T. Tomiyama – N. Anwer
- **STC P** - Profs. A. Donmez – A. Archenti – Y. Takaya

Our CIRP Conferences

4th CIRP Conference on Surface Integrity was successfully held in Tianjin, China from July 11th to 14th.

The 4th CIRP Conference on Surface Integrity was successfully held in Tianjin, China from July 11th to 14th. The conference was hosted by the Centre of Micro/Nano Manufacturing Technology (MNMT¹) of Tianjin University. The conference consisted of surface integrity related issues, ranging from fundamental aspects to its applications, which included keynote speeches, panel discussion, oral presentations and posters. More than 230 researchers from 15 countries or regions have participated in this conference including China, France, Germany, Ireland, Japan, Poland, Singapore, Spain, Sweden, U.K., and U.S.

The opening ceremony of the conference was held in the Renaissance Tianjin Lakeview Hotel in the morning on July 12th. After Professor Fengzhou Fang announced the conference opening, Professor Z. Chen, the vice president of the Chinese Academy of Engineering, Professor F. Klocke, the former president of International Academy for Production Engineering, and professor F. Z. Fang, the chairman of the CIRP CSI2018 delivered welcome speeches, respectively.

During the panel discussion, five experts from China, Germany, Japan, U.K., and U.S. were invited for an insightful discussion by combining their own research areas, focusing on the key issues and future development trends referring to the latest surface integrity research findings.



¹ The Centre of Micro/Nano Manufacturing Technology (MNMT) of Tianjin University was established in 2005, which is one of the leading research institutions in the field. MNMT is mainly engaged in the basic research and application development of optical design and manufacturing, bio-medical manufacturing, micro/nano manufacturing, ultra-precision manufacturing and metrology.

Five distinguished researchers were also invited to deliver keynote speeches on the progress of various research areas ranging from the predictable models, the online measurement technology, processes effects, to surface integrity characterization.



The conference organized 21 sessions and 119 researchers made oral presentations or posters to present their latest research progress. Thirteen Best Paper Awards and five Best Poster Awards were selected by the Conference Awards Committee through rigorous assessment.



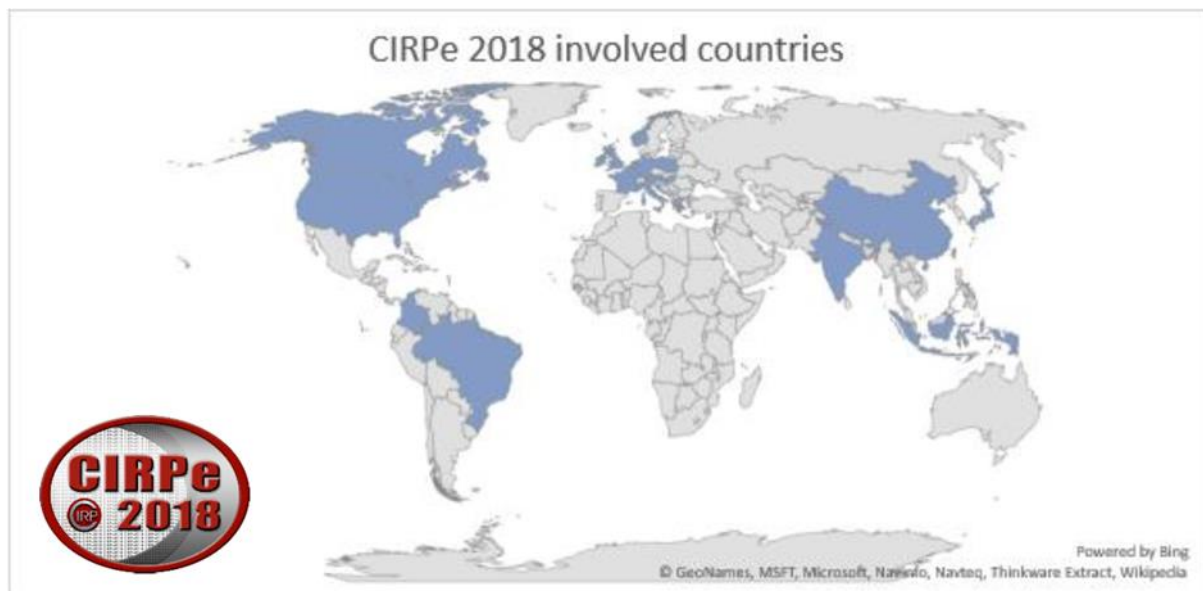
The CSI conference has been successfully held in Germany (Bremen University, 2012), U.K. (Nottingham University, 2014) and U.S. (University of North Carolina at Charlotte, 2016). By providing the forum with an international platform, the conference introduces the development trend of the formation and evolution of surface integrity in various processing technologies. It shows the latest achievements in the research of surface integrity, and promotes the multilateral communication between researchers and industrial partners in various countries and regions. It is of great significance to the manufacture of high-end devices and to the improvement of product quality.

The next CIRP CSI conference will be held in Spain in 2020.

6th CIRPe conference

The 6th edition of the CIRPe conference, organised by the **CIRP Research Affiliates** (Conference Chairs: Alessandro Simeone (Shantou University, China), Paolo C. Priarone (Politecnico di Torino, Italy), was aimed at Envisaging the future manufacturing, design, technologies and systems in innovation era, and the topics of the conference focused on Advanced manufacturing technologies; Advanced design technologies; Lifecycle engineering and assembly; Manufacturing knowledge and human interaction; Manufacturing systems and models; Resource, energy and time efficiency. The broad spectrum of topics is representative of the interdisciplinary nature of the current research fields in production engineering.

The conference was structured in a very tight schedule over 3 days and 12 sessions. More than 90 abstracts were submitted to the 6th CIRPe Conference, and 69 original scientific papers, involving researchers from 21 countries, were selected for presentation after the peer-review process. These numbers confirm the continuous growth and international resonance of the CIRPe Conference, which was first established in 2012, with a constantly increasing numbers of papers being submitted year after year.



An average of 40 contemporary accesses was registered throughout the entire conference duration with a peak of 54 online participants, showing a very impressive turnout despite the 14 different time zones covered. Two groups of Shantou University students were invited to the conference studio to attend relevant sessions as part of teaching activities within undergraduate and postgraduate courses, for a total of 51 students. The intense live discussions after each presentation, with questions submitted to the authors during or after the video broadcasting, further prove the effectiveness of this internet-based conference.

The CIRPe 2018 organizing committee is particularly satisfied that the conference went on smoothly, with efficient participation from the delegates and wishes the best of luck to the organizers of the CIRPe 2019 for a successful and wonderful experience.

Future CIRP Conferences

For the **most recent overview** of our coming CIRP conferences

go to “EVENTS”→ [CIRP Conferences](#)

For the **most recent overview** of our coming CIRP sponsored conferences

go to “EVENTS”→ [CIRP Sponsored Conferences](#)

CIRP Keynote Papers

Our keynote papers are the result of an intensive collaboration between specialists working together during several years within an STC. They are important state of the art papers on important (new) technological areas. CIRP members who are willing to contribute are invited to contact the coordinator of each keynote paper.

2019 Keynote Papers proposals

STC A

Symbiotic Human-Robot Collaborative Assembly - L. Wang (1) et al. - Contact: lihuiw@kth.se

STC C

Biomaterials Machining: From Scientific and Technology Advances to Medical Applications - D. Axinte (1) et al - Contact: dragos.axinte@nottingham.ac.uk

STC Dn

Development capabilities for Smart Products - T. Tomiyama (1) et al. - Contact: t.tomiyama@cranfield.ac.uk

STC E

Visualization of Electro-physical and Chemical Processes - M. Kunieda (1) et al. - Contact: kunieda@edm.t.u-tokyo.ac.jp

STC F

Models and modeling for process limits - W. Volk (2) et al. - Contact: wolfram.volk@utg.de

STC G

Abrasive Processes for Micro Parts and Structures - J. Aurich (1) et al. - Contact: aurich@cpk.uni-kl.de

STC M

Robots in Machining - A. Verl (2) et al. - Contact: alexander.verl@isw.uni-stuttgart.de

STC O

Global Production Networks - G. Lanza (2) et al. - Contact: gisela.lanza@kit.edu

STC P

Geometrical Metrology for Metal Additive Manufacturing - R.K. Leach (2) et al. - Contact: richard.leach@nottingham.ac.uk

STC S

On-machine and in-process surface metrology for precision manufacturing – W. Gao (1) et al. - Contact: gaowei@cc.mech.tohoku.ac.jp

Cross-STCs

Advanced Manufacturing for Enhancing the Performance and Functionality of Tooling for Metal Forming - J. Cao (1) et al. - Contact: jcao@northwestern.edu

2020 Keynote Papers proposals

STC A

Absolute Sustainability - challenges to life-cycle engineering - M. Hauschild (1) et al. -
Contact: mzha@dtu.dk

STC C

Broaching: Cutting Tools and Machine Tools for Manufacturing High Quality Features in Components - P. Arrazola (1) - Contact: pjarrazola@mondragon.edu

STC Dn

Design for Additive Manufacturing, Theories, Models, Methods and Tools - T. Vaneker (2) et al. - Contact: t.vaneker@ctw.utwente.nl

STC E

Space Manufacturing - B. Hon (1) et al. - Contact: hon@liv.ac.uk

STC F

Damage in Metal Forming: Mechanisms, Origin, Effects & Control - E. Tekkaya (1) et al -
Contact: Erman.Tekkaya@iul.tu-dortmund.de

STC G

Interactions of Grinding Tool and Supplied Fluid - C. Heinzl (2) et al. -
Contact: heinzl@iwt.uni-bremen.de

STC M

Energy Efficient Machine tools - B. Denkena (1) et al. - Contact: denkena@ifw.uni-hannover.de

STC O

Big data analytics for smart factories of the future - R. Gao (1) et al. - Contact: robert.gao@case.edu

STC P

Dimensional artefacts to achieve measurement traceability for advanced manufacturing - S. Carmignato (2) et al. - Contact: simone.carmignato@unipd.it

STC S

Manufacturing of multiscale structured surfaces - B. Karpuschewski (1) et al. -
Contact: karpuschewski@iwt-bremen.de

Cross-STCs

Self-Optimizing Machining Systems – H.C. Möhring (2) et al. - Contact: hc.moehring@ovgu.de

2021 Keynote Papers proposals

STC A

State of the Art in Electronics Assembly - J. Franke (2) -

Contact: Joerg.Franke@faps.fau.de

STC C

Structured and Textured Cutting Tool Surfaces for Machining Applications - T. Özel (2)

& P. Mativenga (2) - Contact: ozel@rutgers.edu / P.Mativenga@manchester.ac.uk

STC Dn

The Digital Design Transformation - N. Anwer (2) - Contact: nabil.anwer@ens-paris-saclay.fr

STC E

Ultrashort-Pulse Laser Manufact.: advances & applications - L. Orazi (2) -

Contact: leonardo.orazi@unimore.it

STC F

Forming of New Materials - S. Bruschi (1) - Contact: stefania.bruschi@unipd.it

STC M

Noise and Vibration in machine tools - K. Wegener (2) et al. -

Contact: wegener@iwf.mavt.ethz.ch

STC O

Evolution and future of manufacturing systems - H. ElMaraghy (1) -

Contact: hae@uwindSOR.ca

STC P

Advances in design of precision systems: from micro to large-scale - J.A. Yagüe-Fabra

(2) et al. - Contact: jyague@unizar.es

STC S

Feature-based characterisation and applications - X. (Jane) Jiang (1) -

Contact: x.jiang@hud.ac.uk

2022 Keynote Papers proposals

STC E

Bioprinting: Materials, Processes and Applications - P. Bartolo (1) -

Contact: paulojorge.dasilvabartolo@manchester.ac.uk

STC M

Mechanical Interfaces in Machine Tools - E. Budak (1) -

Contact: ebudak@sabanciuniv.edu

STC P

Advances in performance and traceability of X-ray CT metrology - W. Dewulf (2) -

Contact: wim.dewulf@kuleuven.be

STC S

The implications and evaluation of geometrical surface defects - B. Mullany (2) -

Contact: bamullan@uncc.edu

From the Editorial Committee

(by E. Tekkaya - EC Chair)

At the General Assembly in Tokyo in August 2018 Scott Smith has completed his term as Chairman of the Editorial Committee. He can look back on three successful years of chairing this committee during which the impact factor of the CIRP Annals steadily increased. These years were characterized by his objective, merit-based, dedicated, and especially friendly approach. One of his great secret contributions is the so-called “magic sheet”. It was introduced by him about 6 years ago for tracking the reviewing process with more than 1,000 reviews yearly. To understand the structure and all details of this extremely helpful tool took me the last three years as his vice chair. He also proved to be an expert on nonlinear multi-objective optimization of stochastic phenomena such as the design of the program for presentations during the General Assemblies. We thank Scott Smith sincerely for all his contributions and heartfelt dedication. Thank you, Scott, we will miss you in our meetings!

This year, we had several changes in the Editorial Committee. Our colleagues Dragos Axinte, Bernd Denkena, Chris Evans, and Joao Oliveira left the Editorial Committee. New members are David Aspinwall, Matt Davies, Kaan Erkorkmaz, Jane Jiang, and Rachid M'Saoubi. We are thankful for the contributions of the colleagues who left the Editorial Committee and say a warm welcome to our new members. Sami Kara is the new vice chair of the Editorial Committee; I am looking forward to a fruitful joint work with him.



Professor Scott Smith, Chairman of the CIRP Editorial Committee 2015-2018

The 2018 EC review process

285 regular paper submissions (2 less than 2017) have been received this year. In total, more than 1,140 reviews have been performed by the Editorial Committee. In addition, each STC-Chair and Vice-Chair reviewed and ranked all the paper submissions independently in their own STC. Hence, every paper submission received at least 4 independent peer reviews. Each paper was individually screened for original content using iThenticate software. The iThenticate scores ranged from 2% to 36% this year, with an average of 11%.

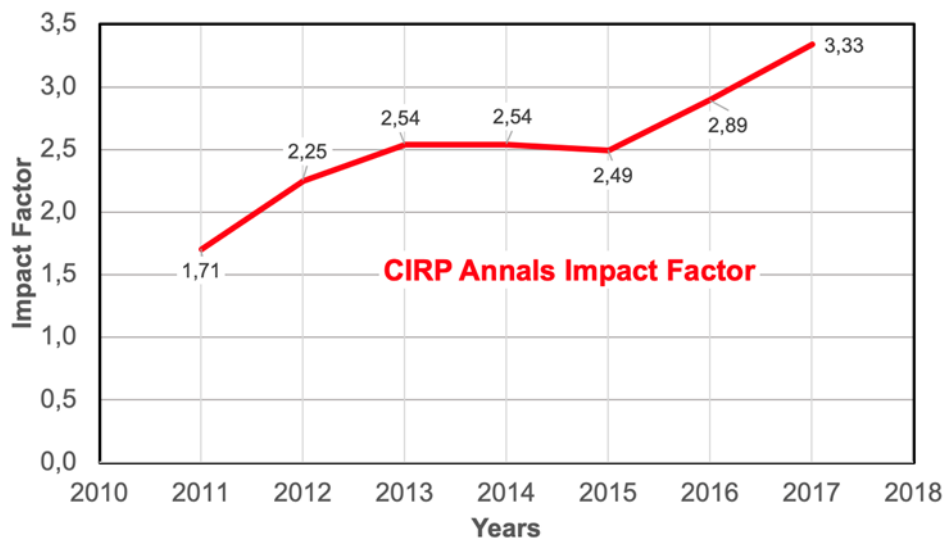
In all, 52% of the submitted papers have been accepted; the acceptance rates over the STC varied from 36% to 64%. As in the past, the papers have been judged purely on quality, not on available presentation slots. 161 of 175 available regular slots have been filled this year.

Submitted and accepted regular papers in 2018 over the STC's

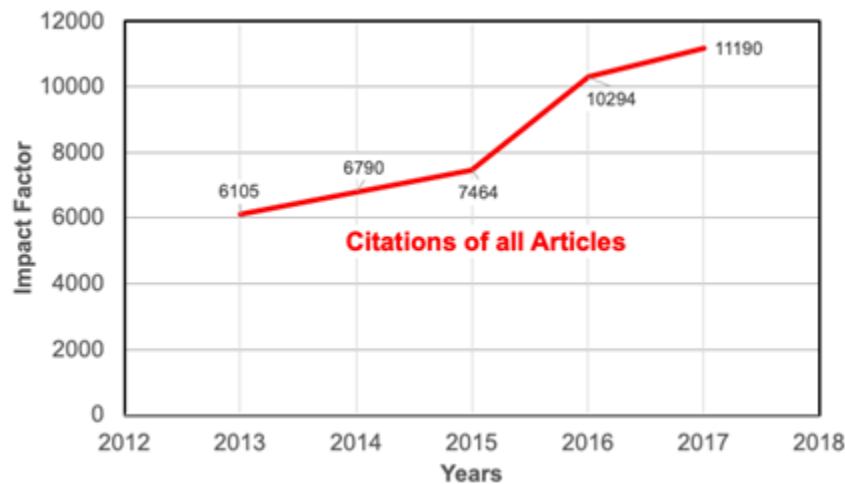
	Accepted Papers	Submitted Papers	Acceptance Rate
STC A	10	28	35,71%
STC C	22	43	51,16%
STC Dn	12	22	54,55%
STC E	19	32	59,38%
STC F	16	25	64,00%
STC G	11	20	55,00%
STC M	16	31	51,61%
STC O	21	43	48,84%
STC P	11	22	50,00%
STC S	10	19	52,63%
Overall	148	285	51,93%

4 Industrial Technical papers have been accepted for the special session before the CMAG meeting. 9 keynote papers from the STC's and 2 cross-STC-keynote papers have been reviewed.

The impact factor rose to 3.33 in the year 2017, which verifies the high-quality reviewing process. The CIRP Annals have been ranked place 10 among 46 manufacturing journals and place 8 among 47 industrial engineering journals according to the Journal Citation Report by Clarivate Analytics.



The citations of all CIRP Annals papers reached a new high of 11,190 in 2017. With 650,000, the 2017 downloads were about 80,000 more than in 2016. Until June 2018, the downloads were over 350,000, letting us expect to pass the 700,000 mark in the year 2018.



The 2019 EC review process

324 abstracts have been accepted for 2019, which is about 15% more than last year. Ten STC-keynotes and one cross-STC-keynote have been received for reviewing. The large number of cooperative work papers this year is remarkable. Next year, clear templates and requirements defining and underlying the cooperative work will be provided.

Publishing in the CIRP Annals

The rules and criteria for judging the papers guiding the activity of the Editorial Committee are given in Article 20 of the Internal Regulations. In summary, the most important rules are:

1. The subject of the paper must fall within the scope of the activities of CIRP.
2. The paper must refer adequately to previous work in the field, in particular to the work of CIRP Members published in the Annals.
3. The content of the paper is not previously published in substantially the same form.

The basic criteria for judging the papers are:

- The work's value to industry.
- The contribution to knowledge within the scope of CIRP activities.
- The correctness of calculations and of the interpretation of the results obtained.
- The extent to which a balance is found in the paper between theory and supporting experimental evidence.
- The extent to which the work described is complete and how much further study and experimentation is required to make it a valuable contribution.

Generally, papers that excite our Academy, in my experience, are papers

- with novel ideas in technologies and fundamentals,
- that clearly described the own contribution,
- that present more than the application of known methods to another case study,

- that exhibit knowledge that is transferable and, hence, lifting the level of the whole field,
- that do not present salami slicing and black box applications.

Most of the papers submitted to the CIRP Annals are the best research papers of our Academy members and the sponsored authors. Despite this, some of these papers are rejected since the reviewing and publishing procedure of the CIRP Annals does not allow a “major” revision timewise. Therefore, it is not surprising that several of the rejected papers are published in strong journals. To support the major revision for such papers we will provide more detailed feedback for rejected papers this year.

Finally, we would like to thank all our Academy members for their diligent effort in preparing their papers and sharing their knowledge within the Academy.

From the CMAG Group

(by Dr. Ömer Sahin Ganiyusufoglu - CMAG Chairman)

After having taken the chair of the CMAG (Corporate Members - CMs) Group it was the second CAMG meeting that has been organized during the General Assembly. The meeting was well attended, almost 100 persons were there from all groups of CIRP family. Six new Corporate Members were welcomed thus comprising 172 CMs in total.

The meeting started with presentation of four Industrial Technical Papers (ITPs) in the morning session leading to good discussion. Authors who were unsuccessful with their papers were encouraged to see how their papers could be improved and to resubmit for consideration next year.



Prof. Lucca (CIRP President) addressed the meeting and stated that CMs were integral to the CIRP activities; he supported the continue the ITPs, which were an initiative led by Prof. Brinksmeier.

The CMAG sessions was followed by two company presentations:

- CFK Valley-Stade (presented by Prof. Dr.-Ing.W. Hintze) joined CIRP as a CM in 2018. The company/organisation comprises 120 member companies/research institutes with competencies across the entire carbon fibre reinforced plastics (CFRP) value chain. An overview of the infrastructure supporting CFRP manufacturing in Stade was presented.
- TechSolve (presented by Dr. R. Pavel) is an organisation dedicated to process improvement with its client companies and SMEs in particular. The brand history of the organisation was outlined. The facilities to support machinability testing and development were presented. There is now an increased emphasis on Smart Manufacturing.

The reminder of the CMAG sessions was based on Technical Presentations. They centred on the theme of Sustainable Manufacturing. Dr. Ganiyusufoglu set the context for the discussion; the challenges of climate change etc. are well recognised and the United Nations has set out clearly its 17 Sustainable Development Goals (SDGs).

The first presentation by Prof. R. Neugebauer and Dr. S. Hippmann was dealing with Biological Transformation: Sustainable Innovation at The Intersection of Biology and Technology. The role of human ingenuity in overcoming the challenges facing the planet are explored. Disruptive innovation is required and the boundaries/limitations in implementing the current Industrie 4.0 Revolution can potentially be overcome through Biological Transformation. Biological Transformation is defined as 'the increasing utilisation of materials, structures and processes of living nature in technologies with the goal of sustainable added value'. Interactions between biology and technology can involve inspiration (using nature as a model for technical development), enhanced integration through to fusion where biological and technical systems function as a single unit.

In the second presentation by Dr. M. Mori the focus is on DMG Mori which has incorporated its actions in relation to the SDGs into its annual reporting structures. The positive impacts made by the machine tool industry overall in meeting the SDGs set out by the United Nations were outlined. Specific examples from the agri-food, transportation, health/well-being, energy and automation sectors were presented and their contributions explored in more detail.

The final topic of the CMAG Meeting was focussed on the discussion: « Productivity – QuoVadis ». Dr. Ganiyusufoglu presented feedback he received on the topic, based on discussions at previous CMAG meetings. General comments were made relating to the inclusion of the digital economy in the measurement of GDP, the increasing prominence of the service sector and the failure of GDP to reflect improved quality of life/well-being. It was also suggested that research results presented at STCs within CIRP should be evaluated in terms of their impacts on productivity or could there be a CIRP-CMAG seminar/conference focusing on productivity ? It was recognised that digitalisation implementation is difficult for SMEs without adequate government supports. Developing countries have great potential to improve and contribute to GDP growth globally so can CIRP/CMAG encourage greater participation by emerging countries in its activities ?

Given the challenges faced by many countries in recent years in coping with natural disasters, the topic of Disaster-Resilient Manufacturing/Production Systems is one which merits further discussion at the CMAG Winter Meeting in 2019; it is also an area that could be explored further by STC O. The Chair welcomed any feedback on this topic in advance of the Winter Meeting.

From the Research Affiliates

(input edited by Sebastien Campocasso)

Words from the RA Steering Committee, by John Erkoyuncu

Dear Research Affiliates and CIRP Colleagues,

As the CIRP Research Affiliate (RA) Committee with Dr. Roy Damgrave (University of Twente, Netherlands) and Dr. Vincent Wang (KTH, Sweden), we are looking forward to grow the RAs involvement in the wider CIRP community.

In its 10th year, the CIRP RA program is continuing to offer young academics globally opportunities to develop in multiple ways. As of October 2018 the size of the RA community is over 120. Some of the key benefits of the RA scheme are networking, sharing knowledge, collaboration opportunities, and visits to each other.



The CIRPe conference was organized by Dr. Alessandro Simeone and Dr. Paolo Priarone. CIRPe 2018 – 6th CIRP Global Web Conference took place on October 23rd-25th with over 70 papers presented. Further information is provided at CIRPe2018.pdr-group.org.

At the CIRP GA in August in Tokyo we discussed the role of RAs and the opportunities to participate in CIRP events. We also continued to allocate time for the collaborative working groups to progress with research discussions.



Ra meeting during the GA in Tokyo

We would also like to remind all RAs about the Research Atlas, which will be hosted on the wider CIRP webpage. This is a web portal to get a quick overview of the research expertise across the RAs.

We are looking forward to meeting you in person at our upcoming events and we hope you will enjoy your RA experience in 2018.

John Erkoyuncu, Chair of RA, on behalf of Roy and Vincent

CIRPe 2019 – Announcement

The annual CIRPe web conference series, hosted and propelled by the CIRP Research Affiliate community, is an attractive event, which has grown and matured from a workshop-style networking event to a full size online conference with growing reputation. It is the variety and reputation of contributors and their topics in the recently held 2018 edition, which indicate once more that CIRPe is considered a valuable and visible publication channel in the CIRP community and beyond.

The theme of the CIRPe Web Conference 2019 is “Towards shifted production value stream patterns through inference of data, models, and technology”. This theme shall continue the discussions of the 2018 Research Affiliate Workshop (hosted by RA M. Fey, Aachen, Germany) under the headline “How would google build a machine tool?”. Within this context, the contributions to the conference should be as domain-spanning and diverse as the topic itself. We are particularly seeking contributions which combine knowledge from at least two of the domains of data processing, modelling techniques and manufacturing technology. This includes:

- advancements in the methods to combine data, models and production technology
- technological advancements which point towards software-defined manufacturing
- production systems that embody shifted value stream patterns

For example, data accumulated in an additive manufacturing process could be used to optimize a subsequent cutting process in order to reduce overall cost for the customer. Other suitable examples would include artificial intelligence methods or cross-domain modelling techniques which process complex manufacturing data in order to simplify or improve manufacturing operations.

We are convinced that there is a plethora of other valuable domain combinations that are worth sharing under this cross-domain theme at CIRPe web conference 2019. Ideally, the contributions discuss how their results can change the pattern in which value will be created in future production. This theme is an attempt to connect mindsets from different STCs and to place such contributions at the center of the conference.

Proposing this theme, we would like to underline and foster the uniqueness of the Research Affiliate network within CIRP, which is based on the variety of STCs the people are affiliated to.

Important Dates:

Abstract Deadline: April 15 2019

Full Paper Deadline: June 10 2019

Conference Date: Oct 16-18 2019

Conference Chairs:

Franz Dietrich (TU Berlin, Germany),

Nicole Krenkel (University Kaiserslautern, Germany)

New books from our members

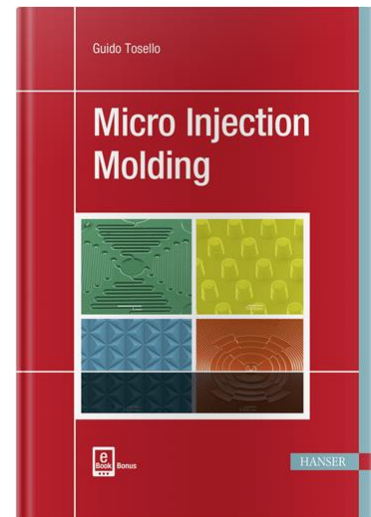
Micro Injection Molding

Guido Tosello

"Micro Injection Molding" meets the need for a dedicated book dealing exclusively with micro injection molding and overcoming the challenges of managing and processing polymer materials at ultra-small scales. Micro injection molding is the primary process for the mass production of polymer components with critical dimensions in the sub-millimeter range; however, it is not just a simple downscaling of conventional injection molding, and specific material-process-product interactions must be understood in order to achieve near zero-defect net-shape micro molded products.

Micro molding is typically associated with ultra-high accuracy and superior process capabilities. Micro molded products have dimensional tolerances down to the single-digit micrometer range and surface finish with roughness from the sub-micrometer down to a few nanometers range. Micro and nano-structured tool surfaces are reproduced with very high replication fidelity onto the polymer products. Micro injection molding is highly suitable for the manufacture of multifunctional micro components such as micro implants, microfluidic systems, polymer micro optical elements, and micro mechanical systems.

This book provides engineers, project managers, researchers, consultants, and other professionals involved in precision polymer processing and micro manufacturing with a comprehensive, up-to-date, and detailed treatment of the main topics related to micro molding, from material and process technology to tooling, to key-enabling technologies, and multimaterial process variations.



Contents:

- Part 1 – Polymer Materials and Process Micro Technology: micro injection molding machines technology; micro molding process monitoring and control; polymer materials structure and properties in micro injection molding parts; surface replication in micro injection molding
- Part 2 – Tooling Technologies for Micro Mold Making: micro machining technologies for micro injection mold making; ultra-precision machining technologies for micro injection mold making; surface treatment of mold tools in micro injection molding
- Part 3 – Micro Molding Key-Enabling Technologies: vacuum-assisted micro injection molding; modeling and simulation of micro injection molding; metrological quality assurance in micro injection molding; additive manufacturing for micro tooling and micro part rapid prototyping
- Part 4 – Multimaterial Micro Processing: micro powder injection molding; multimaterial micro injection molding

<https://www.hanser-elibrary.com/doi/book/10.3139/9781569906545>

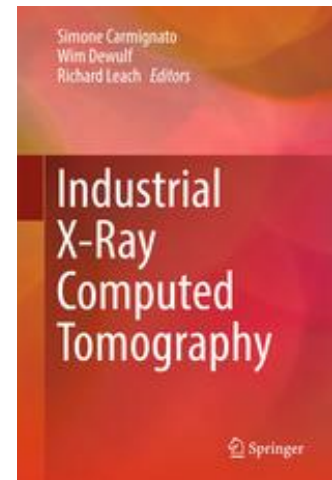
<https://www.amazon.co.uk/Micro-Injection-Molding-Tosello-author/dp/156990653X>

<https://www.hanser-fachbuch.de/buch/Micro+Injection+Molding/9781569906538>

Industrial X-Ray Computed Tomography

Simone Carmignato, Wim Dewulf, Richard Leach

X-ray computed tomography has been used for several decades as a tool for measuring the three-dimensional geometry of the internal organs in medicine. However, in recent years, we have seen a move in manufacturing industries for the use of X-ray computed tomography; first to give qualitative information about the internal geometry and defects in a component, and more recently, as a fully-quantitative technique for dimensional and materials analysis. This trend is primarily due to the ability of X-ray computed tomography to give a high-density and multi-scale representation of both the external and internal geometry of a component, in a non-destructive, non-contact and relatively fast way. But, due to the complexity of X-ray computed tomography, there are remaining metrological issues to solve and the specification standards are still under development. This book will act as a one-stop-shop resource for students and users of X-ray computed tomography in both academia and industry. It presents the fundamental principles of the technique, detailed descriptions of the various components (hardware and software), current developments in calibration and performance verification and a wealth of example applications. The book will also highlight where there is still work to do, in the perspective that X-ray computed tomography will be an essential part of Industry 4.0.



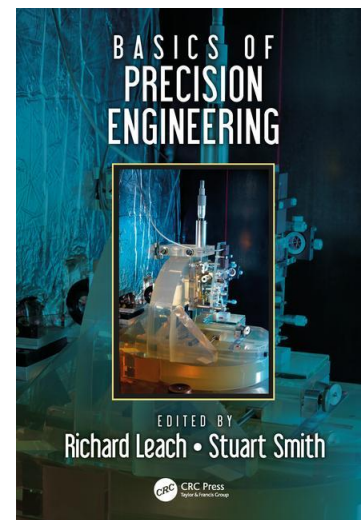
<https://www.springer.com/gb/book/9783319595719>

Basics of Precision Engineering

Richard Leach, Stuart T. Smith

Advances in engineering precision have tracked with technological progress for hundreds of years. Over the last few decades, precision engineering has been the specific focus of research on an international scale. The outcome of this effort has been the establishment of a broad range of engineering principles and techniques that form the foundation of precision design.

Today's precision manufacturing machines and measuring instruments represent highly specialised processes that combine deterministic engineering with metrology. Spanning a broad range of technology applications, precision engineering principles frequently bring together scientific ideas drawn from mechanics, materials, optics, electronics, control, thermo-mechanics, dynamics, and software engineering. This book provides a collection of these principles in a single source. Each topic is presented at a level suitable for both undergraduate students and precision engineers in the field. Also included is a wealth of references and example problems to consolidate ideas, and help guide the interested reader to more advanced literature on specific implementations.



<https://www.crcpress.com/Basics-of-Precision-Engineering/Leach-Smith/p/book/9781498760850>

From the CIRP Office



Chantal Timar-Schubert

Annals papers/keynote papers submissions follow up, CIRP meetings, CIRP Website, candidatures for Membership, Internal Regulations and any internal information.



Agnès Chelet

Financial aspects: accountancy, membership fees, page charges, conferences sponsorships, Winter meetings registrations + Agendas & Minutes of the scientific meetings

News

- Information and registration to the next [CIRP Winter Meetings](#) is ready online on the Website (from the Home Page or through “EVENTS”).

We suggest you book quickly your hotel in Paris to have cheaper prices.

- We kindly remind you that only Fellows and Honorary Fellows attending the Winter Meetings can invite one guest from their own country, and that the guest must have a presentation planned during the meetings.

Corporate members can have two representatives attending the Winter meetings.

Updated CIRP Regulations

Modifications voted at the last General Assembly in Tokyo:

- Additional clarifications have been inserted all over the Internal Regulations to specify the categories of Fellows concerned (Fellow, Honorary Fellow, Fellow Emeritus) when not clear enough.
- Article 23 – Procedure for the [RA Programme](#).
- Appendix 6.2 – [Categories of papers](#) – Annales Vol.1: “Papers” or “Paper Discussions”, become “Original Research Papers”.

Future CIRP Meetings

Dates of the [future CIRP Winter Meetings](#) 2019 - 2025

Dates of the [future CIRP General Assemblies](#) 2019 - 2022