



**The International Academy for Production Engineering**

# **NEWSLETTER**

**N° 62 – Autumn 2021**

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# From the President

Dear CIRP Colleagues,

The coronavirus is still affecting our lives to an extent we hadn't imagined just a few years ago. The health of the individual is challenged, and businesses and societies are heavily affected by the situation. Travel patterns have been disrupted and this has affected our academy as well. We have found new ways of interacting, and the virtual General Assembly this August was an example of such adaptation. I would like to thank the colleagues in Munich once again for their efforts in hosting this event. CIRP has proven to be a very agile and flexible academy throughout the past two years. But I think that we all hope to be able to meet physically again in Paris and in Bilbao.



The physical meeting in the academy remains the top priority, but we will try a hybrid format in the upcoming Paris meeting in this way adapting new meeting formats. I hope that in the future the interaction in our academy will also take place in between our physical meetings by taking advantage of the digital tools that we all have become familiar with in the past period. Increased interaction will lead to a stronger academy.

The challenges that lie ahead of us are enormous and they all require cross-disciplinary solutions. Sustainability and green transition must become more than words and good intentions if the global intention on keeping the temperature increase below a certain limit should be met. Health crises and pandemics require cross-cutting solutions – across borders, continents and societies. Digitalization opens up new possibilities in ways of working and collaborating, but at the same time new dangers appear to companies and societies.

CIRP is the leading academy in production engineering, and the importance of manufacturing will grow also in the future. We have to support solutions in society focused on sustainable transformation by providing new production technologies to meet the new requirements. We can only meet the global objectives of reduced CO2 emission if green technologies are made available at large scales by efficient and greener production technologies. Producing and administering large amounts of medicine and vaccine requires efficient, stable, and agile production methods. The massive digitalization will also be reflected into manufacturing industry and it will affect all our ways of working and in particular technology development. I am confident that CIRP will contribute significantly to solving these challenges, and I look forward to continuing this journey with all of you.

With best regards,

Hans Nørgaard Hansen  
President of CIRP 2021-2022

# From the Editor

Dear CIRP colleagues,



Warm greetings from Canada! It is my genuine pleasure and honor to join you as the incoming Technical Secretary of CIRP, and as the new Editor of CIRP's Newsletter.

I wish to start by acknowledging the deep and long-standing contributions made by Professor Bert Lauwers, my predecessor. Over the last six years, through his scrupulous work, Prof. Lauwers has led critical management and administrative tasks for CIRP, contributing to the 'smooth operation' of our academy. Furthermore, Bert's excellent work on the CIRP Newsletter has continued to raise the bar for communication, cooperation, and sense of community within CIRP. On a personal note, Bert has been, and continues to be, a valuable source of support and wisdom for me, in my tasks as the incoming Technical Secretary.



*Dear Bert, thank you for all of your exemplary contributions!  
Wishing you all the best in your new role as the Vice President of CIRP.*

As the new Editor, I invite all members to submit their news relevant to our academy (e.g., news from members, awards, books written by members, etc.). Organizers of CIRP conferences are also asked to send a small report (highlights, pictures, etc.) which can be published in the Newsletter. The material can be sent to the CIRP office ([cirp@cirp.net](mailto:cirp@cirp.net)) or directly to myself ([kaane@uwaterloo.ca](mailto:kaane@uwaterloo.ca)).

I would also like to draw your attention to the steadily growing section on our web-site "Education Portal", meant as a medium to share relevant information related to manufacturing education. Any member who wants to contribute to this education section is welcome to do so. Any relevant information can be sent to the CIRP Secretariat ([cirp@cirp.net](mailto:cirp@cirp.net)).



With best regards,

Kaan Erkorkmaz  
CIRP Technical Secretary

# News from Members

## Professor Paulo A.F. Martins and Professor Julian Allwood receive JSTP International Prize on Precision Forging



Prof. Paulo Martins



Prof. Julian Allwood

At the 13<sup>th</sup> International Conference on Technology of Plasticity, which was held as a virtual event with base in Ohio State University during July 25-30, Professor Paulo A.F. Martins, University of Lisbon, and Professor Julian Allwood, University of Cambridge, were awarded the [International Prize for Research & Development in Precision Forging](#), delivered by the Japan Society for Technology of Plasticity (JSTP). This award is given to recognize distinguished researchers who have contributed worldwide to the advancement of precision forming technology with high quality research work.

Prof. Paulo Martins received the prize for his pioneering work on “Development of FE programs for metal forming and resistance welding, analytical framework for ductile fracture in metals, and innovative processes for tube forming and manufacturing of bi-material collection coins”.

Prof. Julian Allwood received the prize for his pioneering work on “Process innovation such as paddle forming, asymmetric spinning and ring rolling, and for providing a holistic view on global use of energy and materials.”

The JSTP International Prize is one of the most prestigious Japanese awards in manufacturing technology, comprising a gold medal, a plaque, and a monetary prize, sponsored by Nichidai Corporation, a successful Japanese forming tool manufacturer.

Besides sponsoring the awards, Nichidai is financing an international seminar on precision forming for 30 young researchers, to take place in the autumn of 2022. The aim of this event is to bring together young scientists from Asia, Europe and America with a small group of leading scientists, including the prize winners and the international selection board consisting of four internationally renowned scientists in metal forming, for personal exchange of experience.

## Professor Taylan Altan and Professor Niels Bay honored at the ICTP 2021



Prof. Taylan Altan

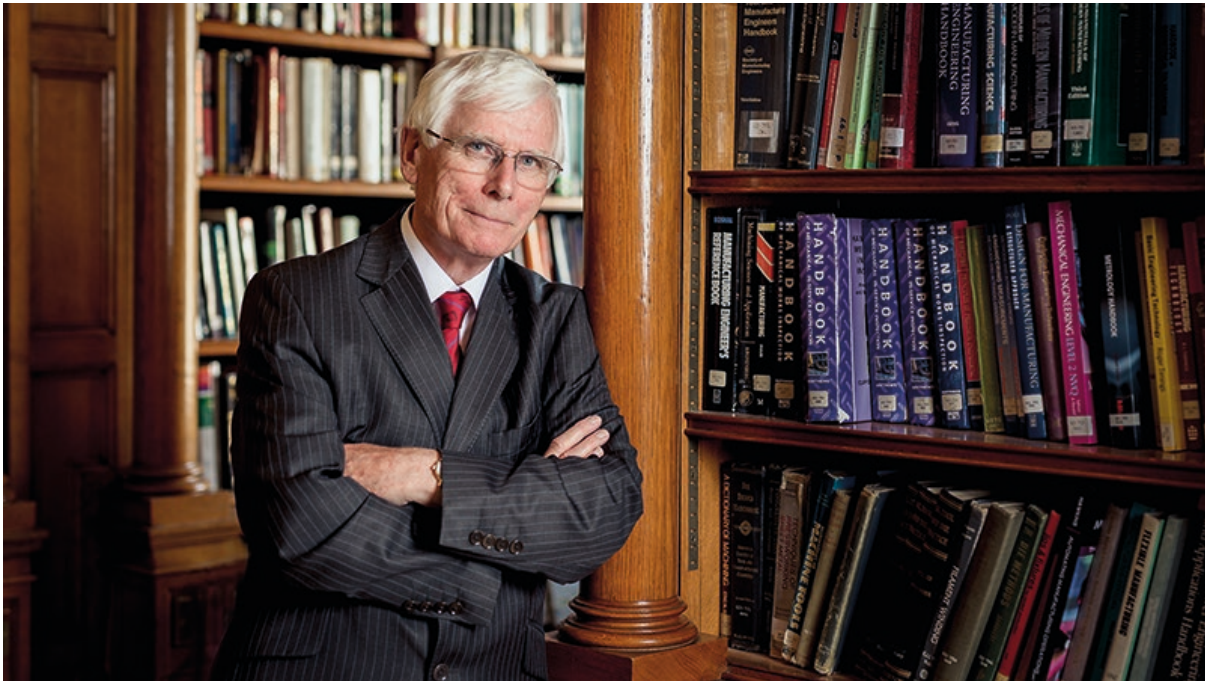


Prof. Niels Bay

At the 13th International Conference of Technology of Plasticity held as a virtual event with base in Ohio State University on 25<sup>th</sup> – 30<sup>th</sup> July 2021, Professor Taylan Altan, Ohio State University, and Professor Niels Bay, Technical University of Denmark, were honored together with four non-members of CIRP as “pioneers in metal forming”. The other four were Professor Robert Wagoner, Ohio State University, Professor Zhongren Wang, Harbin University, Professor Xue Yu Ruan, Shanghai Jiao Tong University, and Professor Yasuhisa Tozawa, Daido Institute of Technology, Japan.

At the conference also called *The Olympics of Metal Forming*, which is held every three years, an honorary symposium for each of the six were arranged with invited speakers. A similar event was last held at the ICTP in 1996.

## Professor Joe McGeough heads IMechE Task Force on COVID-19



Prof. Joe McGeough, *image source: www.imeche.org*

Joe McGeough who is Emeritus Fellow of CIRP has chaired the Institution of Mechanical Engineers (IMechE) Task Force on Covid-19 from June 2020 until February 2021. The task force was made up of professional mechanical engineers from its Technical Strategy Board covering the entire range of its disciplines, including Manufacturing, Buildings, Aerospace, and Medical Engineering, and representatives from its International Boards from Hong Kong, the Middle East, and Far East.

The Task Force supplied guidance and presentations to official bodies and industry in the UK on how to deal with the virus. In August, Prof. McGeough and IMechE colleagues subsequently gave an account of their work to Scotland's national academy, The Royal Society of Edinburgh, as part of its "CURIOUS" summer programme for the Edinburgh Festival: "The Covid-19 Challenge to Mechanical Engineers".

Prof. McGeough had served as President of the Institution of Mechanical Engineers from May 2019 to May 2020, during which he was able to meet with some CIRP colleagues in the UK and Ireland. His presidential address dealt with the achievements of DTN Williamson, a pioneer of computer-aided manufacturing in the second half of the 20<sup>th</sup> Century.

# General Assembly 2021

The 70<sup>th</sup> CIRP General Assembly (GA) was held virtually, for the first time ever, through the highly successful organization of Technische Universität München colleagues, Professors Michael F. Zäh, Hartmut Hoffmann, Wolfram Volk, and Gunther Reinhart, and their dedicated teams.



“War Room” during the conference and studio for live sessions



Coordination of the conference by members of the CIRP organizing team



Preparations for the recording of the music act for the Opening Session

## Comments from the GA participants:

*“It was a pleasure attending the well-organized CIRP GA. You and the whole Munich-team did a fantastic job even under the difficult conditions. Congratulations and a big “Thank you”!”*

*“In any measure, it is the most successful virtual conference I have attended since the global pandemic.”*

*“We certainly enjoy the virtual GA with Congress News - the Daily Munich.”*

*“The organisation of the GA was excellent. I was impressed how well it worked. This was a huge amount of work for the organizing team. Many thanks to you and the whole team in Munich.”*



# CIRP Awards



During the 70<sup>th</sup> CIRP General Assembly, the **General Pierre Nicolau Award for 2020** was presented to **Mr. Makoto Sato**, former Executive Senior Managing Director of Makino Milling Machine Co., Ltd.

Among Mr. Sato's significant contributions are the development of advanced 5-axis machine tools and various kinds of FMS systems, not only for Makino but also for the machine tool industries in Japan. He has also contributed much to the development of advanced high-speed and high-productive machining technologies for dies and molds, named FF machining. As a direct result of Mr. Sato's contributions, Makino's machining centers and their machining technology have obtained high reputation among the machine tool and manufacturing industries. Mr. Sato has also led the Technical Committee of Japan Machine Tool Builders Association as a Vice Chairman for many years.



The **General Pierre Nicolau Award for 2021** was presented to **Dr. Joseph Beaman, Jr.**, Earnest F. Gloyne Regents Chair in Engineering at the University of Texas at Austin.

Dr. Beaman is best known for his invention of Selective Laser Sintering. His team was the first group that successfully achieved direct fabrication of engine hardware, such as turbine blade tips, instead of initially creating prototype parts. He co-founded DTM Corporation, which was acquired by 3D Systems, to commercialize the technology. His scientific and technical contributions include the 1987 foundation paper at SME/NAMRC and about 20 patents related to powder bed additive manufacturing. Prof. Beaman is an elected member of the National Academy of Engineers and the National Academy of Inventors.



We earnestly congratulate Mr. Sato and Dr. Beaman for their outstanding contributions to the field of production engineering, which have been recognized by CIRP's General Pierre Nicolau Award.



The **F.W. Taylor Medal for 2020** has been awarded to **Dr. Xavier Beudaert**, Researcher at IK4-IDEKO, Spain, for his paper: “Portable damping system for chatter suppression on flexible workpieces”, presented at the STC M session of the 69<sup>th</sup> CIRP General Assembly in Birmingham, UK, 2019.

The paper was sponsored by Dr. Jokin Munoa and Prof. Kaan Erkorkmaz. The work presented in the paper is the result of collaboration between IK4-IDEKO, Spain, and the University of Waterloo, Canada, since 2016. The paper has proposed: a novel concept with the active damping of workpieces for chatter suppression; a model-free active damping auto-tuning procedure; the design of a dedicated actuator, and; the validation of the portable active damping system.



The **F.W. Taylor Medal for 2021** has been awarded to **Dr. Yicha Zhang**, Associate Professor at the University of Technology of Belfort-Montbéliard, France, for his paper: “Bio-inspired generative design for support structure generation and optimization in Additive Manufacturing”, presented virtually in STC Dn during the 2020 CIRP August Meetings.

This paper was sponsored by Prof. Alain Bernard. The paper proposes a new generative method mimicking the natural plant's growth for support structure design and optimization. It is the first time to apply the L-system theory, which can easily embed Additive Manufacturing constraints. The experiment shows that the method has potential to be adopted by industry for AM, especially dental fabrication companies.



We sincerely congratulate Dr. Beudaert and Prof. Zhang on their outstanding scientific achievements, which have been recognized by the CIRP F.W. Taylor Medal.

# **ELECTIONS approved at the General Assembly Meeting 2021**

## **2021-2022 Board and Council members**

President	Prof. H. Hansen
Vice President	Prof. B. Lauwers
Vice President Elect	Prof. F. Fang
Past President	Prof. M. Mitsuishi
Secretary General Treasurer	Prof. D. Dumur
Technical Secretary	Prof. K. Erkorkmaz
Council Members	Prof. J. Aurich
	Prof. M. Hauschild
	Prof. M. Kunieda
	Prof. E. Lutters
	Prof. S. Smith
	Prof. T. Tolio

## **Fellows**

Dr. G. Bissacco (Denmark)  
Prof. S. Carmignato (Italy)  
Prof. M. Colledani (Italy)  
Prof. J-Y. Dantan (France)  
Prof. W. Grzesik (Poland)  
Prof. D-E. Kim (Korea)  
Prof. R. Mayer (Canada)  
Dr. J. Munoa (Spain)  
Prof. A. Nassehi (UK)  
Prof. F. Pfefferkorn (USA)  
Dr. J. Yagüe-Fabra (Spain)  
Prof. M. Zaeh (Germany)

## **Associate Members**

In February 2021

Prof. T. Bergs (Germany)  
Dr. X. Beudaert (Spain)  
Prof. J. Erkoyuncu (UK)  
Dr. T. Hayasaka (Japan)  
Dr. A. Islam (Denmark)  
Dr. T. Kizaki (Japan)  
Prof. E. Morse (USA)  
Dr. A. Sadek (Canada)  
Dr. N. Suzuki (Japan)  
Prof. S. Thiede (Netherlands)

In August 2021

Prof. D.G. Ahn (Korea)  
Dr. S. Bukkapatnam (India)  
Dr. A. Günther (Switzerland)  
Dr. M. Helu (USA)  
Prof. Y. Li (China)  
Dr. Z. Liao (UK)

## **Fellows Emeritus**

Prof. T. Altan (USA)  
Prof. E. Abele (Germany)  
Prof. N. Duffie (USA)  
Prof. C. Evans (USA)  
Prof. B. Kaftanoglu (Turkey)  
Prof. B. Milcic (Croatia)  
Prof. G. Reinhart (Germany)  
Prof. D. Spath (Germany)  
Prof. J. Webster (UK)

## **Corporate Members**

Arcelik (Turkey)  
Ind-Sphinx Precision Ltd (India)  
LMT Tools (Germany)  
Mitsubishi Power Lid (Japan)  
Oak Ridge National Laboratory - ORNL (USA)  
Reishauer (Switzerland)  
Western Digital Corp. (USA)

## **Research Affiliates**

Dr. S. Coutandin (Germany)  
Dr. M. Guerra (Italy)  
Dr. J. Hofmann (Germany)  
Dr. A. Honeycutt (USA)  
Dr. J. Karandikar (USA)  
Dr. M. Kilic (UK)  
Dr. N. Li (Germany)  
Dr. A. Lutey (Italy)  
Dr. J. Murray (UK)  
Dr. U. Mutilba (Spain)  
Dr. L. Yi (Germany)  
Dr. N. Yu (UK)

## **New STC Officers**

STC G : Prof. H. Yamaguchi (Ch) - Prof. C. Heinzl (V-Ch) - Dr. E. Da Silva (Sec)  
STC M : Prof. A. Matsubara (Ch) - Prof. M. Zaeh (V-Ch) - Prof. K. Erkorkmaz (Sec)

# Our CIRP Conferences

## 28<sup>th</sup> CIRP Conference on Life Cycle Engineering (March 2021, India)

In March 2021, Prof. Christoph Herrmann from the Institute of Machine Tools and Manufacturing Technology of the Technische Universität Braunschweig, and Prof. Kuldip Singh Sangwan from the Birla Institute of Technology and Science, BITS Pilani, hosted the 28th CIRP Conference on Life Cycle Engineering. Due to the COVID-19 pandemic, the conference originally planned in Jaipur had to be converted to online format.



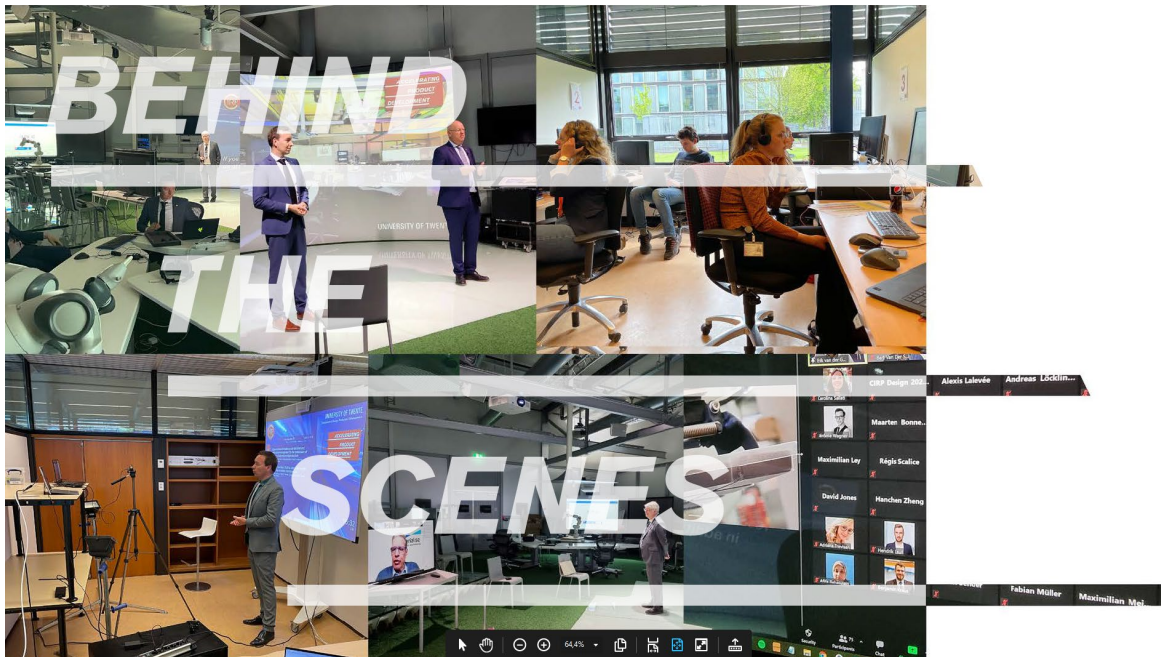
The conference took place under the motto "engineers for global sustainability" and offered an overview of outstanding research results on the topic of sustainable development of the life cycle of products. Around 250 active participants from 22 different countries were offered a diverse range of scientific presentations, five inspiring keynotes, and an interactive social program during the three conference days.

In addition to a yoga session and a social event, there was also the opportunity to take part in the Escape Game "The Cycle" along the conference. In this way, an active exchange between the international experts in the field of life cycle engineering could be ensured also in the virtual format. Within a student competition, students from all over the world were called upon to describe current sustainability challenges in their respective countries in a short video.

Although the conference could not take place in Jaipur as planned, the preparation and the three conference days were a unique experience for the Indo-German organization team. A video with the main conference highlights has been posted on the event [website](#) and is available in [YouTube](#).

## 31<sup>st</sup> CIRP Design Conference (May 2021, The Netherlands)

The 31<sup>st</sup> CIRP Design conference was held online from 19-21<sup>st</sup> of May 2021. This conference followed a quite strict and tight schedule, in which we started with over 280 abstracts, which resulted in roughly 200 manuscripts and finally in 148 papers that were accepted and presented at the conference. This has been quite a challenging venture that has only been possible because of all the authors who have pro-actively contributed to the editorial process. We also want to thank the International Scientific Committee for investing their time and critical thinking into the reviewing process while sticking to the proposed timeline.



The conferences applied a system of parallel tracks, which provided the authors the opportunity to summarize their work and conduct brief Q&A with the audience. Each track was subdivided in sessions of one hour each. Each of such sessions clustered three publications/presentations. Per hour, there were three online live presentations of 10-15 minutes each via Zoom. The remainder time after the presentations of the session focused on questions and discussion.

From what we have observed, both authors and reviewers have been very constructive in considering the opinions and in improving the quality of all papers. In this conference, we had over 160 participants from more than 25 countries. And even though we have not been able to host this conference in person at the University of Twente, we still saw quite good attendance in many of the sessions related to the 19 topics in the program. Despite the odd unavoidable technical hiccup, many of the sessions ended with lively discussions that quite often extended beyond the start of the subsequent sessions. With that, we hope that we've been able to offer a pragmatic alternative to the foyer-and-coffee-corner discussions that are so typical of CIRP conferences.

The organizing committee,  
Eric Lutters, Roy Damgrave, Jos de Lange, Maaïke Slot

## 9<sup>th</sup> CIRP Conference on High Performance Cutting (May 2021, UK)

The 9<sup>th</sup> CIRP Conference on High Performance Cutting (HPC 2021) was held virtually between 24<sup>th</sup> – 26<sup>th</sup> of May, 2021 at AMRC, UK. This conference had been planned as an in-person event for June 2020. Due to the pandemic, it had to be postponed and converted to a digital conference. The conference received 205 paper submissions. After the review process, 93 papers were accepted for oral presentation and publication in CIRP Procedia.

On the 24<sup>th</sup> of May, Dr Erdem Ozturk opened the conference and AMRC CEO Steve Foxley delivered an introduction about AMRC. There were also two keynote speakers from industry, Dr. Masahiko Mori from DMG Mori and Dr. Donka Novovic from Rolls-Royce. The titles of their keynotes were, respectively, “The future of global manufacturing and machine tool industry”, and “The journey to future smart machining systems”. Then, papers accepted for publication in CIRP Procedia were presented in four parallel theme-based sessions.



**DMG MORI**



### The Future of Global Manufacturing and Machine Tool Industry

MASAHIKO MORI  
President, Dr., Eng.  
DMG MORI CO., LTD.



On the second day, Prof. Berend Denkena from IFW, Leibniz Universität Hannover, delivered his keynote titled “On the path to autonomous machine tools”. Following the keynote was a presentation from Steve George, Kennametal, titled: “Studies of end mill flute geometry enhancements on specific cutting energy and chip formation”. Then, regular papers continued in four parallel sessions.



On day three, Prof. Susanne Norgren presented her keynote, followed by a presentation by Nishant Saini from Third Wave Systems. Prof. Norgren’s presentation was “A contribution to the understanding of tool/workpiece interaction in high performance metal cutting”, while the title of Nishant Saini’s presentation was “Using thermal turning to drive High Performance Cutting on production floors in Aerospace & Defence”. The third day wrapped up with parallel sessions of the paper presentations.

Susanne Norgren

*A contribution to the understanding of tool/workpiece interaction in high performance metal cutting*

Sandvik Group, Global group expert in Materials Design  
 Adjunct Professor at Dept of Industrial Production Lund Univ.  
 Fellow of the Royal Swedish Academy of Engineering Sciences

As feedback from the conference participants, some of the well-appreciated features were the keynote presentations, and the access to on-demand videos which enabled the opportunity to review the technical contents at the attendees’ own time.



## **15<sup>th</sup> CIRP Conference on Intelligent Computation in Manufacturing Engineering (July 2021, Italy)**

The 15<sup>th</sup> CIRP Conference on Intelligent Computation in Manufacturing Engineering (CIRP ICME '21), held during 15-16 July 2021 in Italy, for the 2<sup>nd</sup> time since its establishment with Dr. Merchant in 1998, has gone through the challenge of being run as an Internet-based virtual conference, which has indeed proven to be a stimulating and valuable experience. There have been over 1000 views and over 190 comments to KN (keynote), Symposium and Technical Sessions paper presentations, representing a truly positive result for the Virtual Conference.

The response to the 15<sup>th</sup> edition of the CIRP ICME Conference in terms of number of submitted papers and their quality has confirmed the widespread interest in Intelligent Computation in Manufacturing Engineering, covering the whole of production engineering research. The CIRP ICME '21 Virtual Conference has attracted more than 150 delegates with 1 Keynote presentation in the Plenary Session and 105 Symposium and Technical Session presentations by authors from 20 countries and 4 continents.

The topics dealt with ranged from Manufacturing Systems issues (System Modeling, Design, Planning and Control; Supply and Production Networks; Machine Tools and Anomaly Detection; Assembly Systems; Logistics Systems; Maintenance Systems; Human-Robot Collaboration), to Manufacturing Technology related matters (Product Life Cycle, Product Design and Product Service), to Manufacturing Technology aspects (Cutting, Welding, Forming, Additive Manufacturing, Non-traditional Technologies, Metrology, Quality Assurance and Testing), as well as emerging issues such as Smart Production, Eco-systems, Biological Transformation, Sustainability, Machine Learning and Deep Learning, Energy and Resource Efficiency, Intelligent and Digital Factory, Virtual and Augmented Reality, Cyber Physical Systems, Cloud Manufacturing and Digital Twin within the Industry 4.0 framework. Furthermore, a Special Symposium was organized within the CIRP ICME '21 Virtual Conference, in collaboration with Prof. Nariaki Nishino, Japan, relating to the International Workshop on Emergent Synthesis (IWES) in honor of its founder Prof. Kanji Ueda, Past President of CIRP.

Through this wide range of research topics, the CIRP ICME '21 Virtual Conference aimed at providing an international forum for the exchange of up-to-date knowledge, information, experience, results as well as the review of progress, discussions on the state-of-the-art and future trends in the various sectors of Advanced Manufacturing Technology and Systems.

Deep appreciation is due to the people and organizations that contributed to the realization and success of the CIRP ICME '21 Virtual Conference: Prof. Reimund Neugebauer and Dr. Simon Harst, Germany, for their Keynote presentation in the Plenary Session; Prof. Nariaki Nishino, Japan, for organizing and chairing of the IWES Symposium; the members of the Organizing Committee: Prof. Doriana D'Addona, Dr. Tiziana Segreto, Dr. Alessandra Caggiano, Dr. Alessandro Simeone; and all the presenting authors for their valuable and effective work.

Particular recognition is due to the International Academy for Production Engineering (CIRP), the main scientific sponsor of the CIRP ICME Conference Series; the University of Naples Federico II for its strong organizational support; and the co-sponsor of the event, the Fraunhofer Joint Laboratory of Excellence on Advanced Manufacturing Technology (Fh-J\_LEAPT UniNaples) participating with representation from Germany and Italy.

## Cognitive Manufacturing Systems – Efficient, Flexible and Resilient

by Reimund Neugebauer, Simon Harst (Germany)

Video presentation



Keynote by Prof. Reimund Neugebauer and Dr. Simon Harst, Fraunhofer Gesellschaft.



**CIRP ICME '21 Virtual Conference**  
15<sup>th</sup> CIRP International Conference on  
INTELLIGENT COMPUTATION IN MANUFACTURING ENGINEERING  
14 - 16 July 2021




### Adaptive and Dynamic Feedback Loops between Production System and Production Network based on the Asset Administration Shell

Florian Stamer<sup>a</sup>, Simon Maier<sup>a</sup>, Sina Peukert<sup>a</sup>, Gisela Lanza<sup>a</sup>

<sup>a</sup>Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany



Presenting author

	<b>Name:</b>	Florian Stamer
	<b>Affiliation:</b>	Karlsruhe Institute of Technology, Germany
	<b>Email:</b>	florian.stamer@kit.edu

Technical session presentation.



## IWES: International Workshop on Emergent Synthesis

**Nariaki Nishino**

Associate Professor

Department of Technology Management for Innovation,  
School of Engineering, The University of Tokyo

Email: [nishino@tmi.t.u-tokyo.ac.jp](mailto:nishino@tmi.t.u-tokyo.ac.jp)



Introduction to the Special Symposium on IWES by Prof. Nariaki Nishino, University of Tokyo, Japan

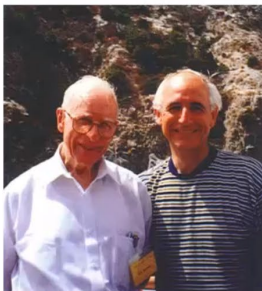
### Closing Address by the Chairman



## CIRP ICME '21 Virtual Conference Closure



**Ladies and Gentlemen, Colleagues and Friends!**



Dr. Merchant and Prof. Teti at the 1st CIRP ICME Conference held in 1998 in Capri, Italy. In the background, the cliffs of the island of Capri.

- As Chairman of the **15<sup>th</sup> CIRP Conference on Intelligent Computation in Manufacturing Engineering – CIRP ICME '21** – and on behalf of the Organising Committee, I should like to formally close the **CIRP ICME '21 Virtual Conference** held from **14 to 16 July 2021**.
- The **CIRP ICME Conference**, for the second time in a row since its establishment with **Dr. Merchant** in 1998, has gone through the challenge of being run as an internet-based **Virtual Conference**, which indeed has proven to be a stimulating and valuable experience
- There have been **over 1000 views** and **150 comments** to **Keynotes, Symposium and Conference Sessions** presentations, representing a truly positive result for the **Virtual Conference**.



Closing address by the CIR ICME '21 Chairman, Prof. Roberto Teti, with a tribute to Dr. Eugene Merchant from the 1<sup>st</sup> CIRP ICME Conference held in 1998 at Capri, Italy.

# Future CIRP Conferences and Sponsored 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](#)

You can find all CIRP Conferences and Sponsored Conferences **past events** through the link EVENTS → [CIRP Past Events](#)

# 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.

## 2022 Keynote Papers

### STC A

**Closed loop systems to circular economy: Staying within the planetary boundaries** - S. Kara (1) - Contact: [S.Kara@unsw.edu.au](mailto:S.Kara@unsw.edu.au)

### STC C

**Process monitoring of machining** - R. Teti (1) - Contact: [roberto.teti@unina.it](mailto:roberto.teti@unina.it)

### STC Dn

**Designing value-driven solutions: The past and future of industrial product-service systems** - D. Brissaud (1) - Contact: [daniel.brissaud@grenoble-inp.fr](mailto:daniel.brissaud@grenoble-inp.fr)

### STC E

**Bioprinting: materials, processes and applications** - P. Bartolo (1) - Contact: [paulojorge.dasilvabartolo@manchester.ac.uk](mailto:paulojorge.dasilvabartolo@manchester.ac.uk)

### STC F

**Simulation of metal forming - Visualization of forming phenomena in a digitized era** - J. Yanagimoto (1) - Contact: [jun.52074.yanagimoto@cem.t.u-tokyo.ac.jp](mailto:jun.52074.yanagimoto@cem.t.u-tokyo.ac.jp)

### STC G

**Advances in grinding tools and abrasives** - A. Beaucamp (2) - Contact: [beaucamp@me.kyoto-u.ac.jp](mailto:beaucamp@me.kyoto-u.ac.jp)

### STC M

**Mechanical interfaces in machine tools** - E. Budak (1) - Contact: [ebudak@sabanciuniv.edu](mailto:ebudak@sabanciuniv.edu)

### STC O

**Daydreaming factories** - A. Nassehi (2) - Contact: [aydin.nassehi@bristol.ac.uk](mailto:aydin.nassehi@bristol.ac.uk)

### STC P

**Advances in metrological performance and traceability of X-ray computed tomography** - W. Dewulf (1) - Contact: [wim.dewulf@kuleuven.be](mailto:wim.dewulf@kuleuven.be)

### STC S

**The implication and evaluation of geometrical imperfections on manufactured surface** - B. Mullany (1) - Contact: [bamullan@uncc.edu](mailto:bamullan@uncc.edu)

## 2023 Keynote Paper Proposals

### STC A

**Automated assembly of non-rigid objects** - S. Makris (2) - Contact: [makris@lms.mech.upatras.gr](mailto:makris@lms.mech.upatras.gr)

### STC C

**Digital twin for cutting processes** - T. Bergs (2) - Contact: [t.bergs@wzl.rwth-aachen.de](mailto:t.bergs@wzl.rwth-aachen.de)

### STC Dn

**Biologicalisation driven product designs** - A. Malshe (1) Contact: [amalshe@purdue.edu](mailto:amalshe@purdue.edu)

### STC E

**Digital twin for electro-physical and chemical processes** - Y. Guo (1)  
Contact: [yuebin.guo@rutgers.edu](mailto:yuebin.guo@rutgers.edu)

### STC F

**Plasticity and future of stress superposition in metal forming** - E. Tekkaya (1) - Contact: [Erman.Tekkaya@iul.tu-dortmund.de](mailto:Erman.Tekkaya@iul.tu-dortmund.de)

### STC G

**Grinding of composites materials** - B. Zhang (1) - Contact: [zhangb@sustech.edu.cn](mailto:zhangb@sustech.edu.cn)

### STC M

**Sensor and actuator integrated tooling systems** - F. Bleicher (2) Contact: [bleicher@ift.at](mailto:bleicher@ift.at)

### STC O

**Platform based manufacturing** - T. Tolio (1) - Contact: [tullio.tolio@polimi.it](mailto:tullio.tolio@polimi.it)

### STC P

**Gear metrology - An update** - G. Goch (1) - Contact: [fgoch@uncc.edu](mailto:fgoch@uncc.edu)

### STC S

**Modelling and simulation of surface generation in manufacturing processes** -  
G. Tosello (2) - Contact: [guto@mek.dtu.dk](mailto:guto@mek.dtu.dk)

## 2024 Keynote Paper Proposals

### STC A

**Implementing circular economy activities in manufacturing for environmental sustainability** - T. Sakao (2) - Contact: [tomohiko.sakao@liu.se](mailto:tomohiko.sakao@liu.se)

### STC C

**Sustainable machining** - P. Arrazola (1) - Contact: [pjarrazola@mondragon.edu](mailto:pjarrazola@mondragon.edu)

### STC Dn

**Data science for engineering design** - A. Liu (2) - Contact: [ang.liu@unsw.edu.au](mailto:ang.liu@unsw.edu.au)

### STC E

**Dynamic beam shaping in laser processes** - M. Schmidt (2) - Contact: [michael.schmidt@lpt.uni-erlangen.de](mailto:michael.schmidt@lpt.uni-erlangen.de)

### STC F

#### **Artificial intelligence in metal forming (data integration and sensors in metal forming) -**

J. Cao (1), M. Merklein (1) - Contacts: [jcao@northwestern.edu](mailto:jcao@northwestern.edu); [marion.merklein@fau.de](mailto:marion.merklein@fau.de)

### STC G

#### **Advances in modelling of fixed abrasive processes**

### STC M

**Hybrid additive/subtractive machines** - S. Smith (1) - Contact: [smithss@ornl.gov](mailto:smithss@ornl.gov)

### STC O

**Virtualization and autonomy in manufacturing systems** - G. Putnik (2) -

Contact: [putnikgd@dps.uminho.pt](mailto:putnikgd@dps.uminho.pt)

### STC P

**Integrated metrology for advanced manufacturing systems** - A. Archenti (2) - Contact:

[archenti@kth.se](mailto:archenti@kth.se)

### STC S

**Surface conditioning in machining processes** - V. Schulze (2) - Contact:

[volker.schulze@kit.edu](mailto:volker.schulze@kit.edu)

## 2025 Keynote Paper Proposals

### STC A

**Human-centric assembly in smart factories** - L. Wang (1) - Contact: [lihui.wang@iip.kth.se](mailto:lihui.wang@iip.kth.se)

### STC C

**Integrated machining performance for assess. of cutting tools (IMPACT)** - I.S. Jawahir

(1) - Contact: [is.jawahir@uky.edu](mailto:is.jawahir@uky.edu)

### STC G

**Advances in magnetic-field assisted finishing** - H. Yamaguchi (2) -

Contact: [hitomiy@ufl.edu](mailto:hitomiy@ufl.edu)

### STC M

**Fixtures and clamping systems in machining** - H.C. Möhring (2) -

Contact: [hc.moehring@ifw.uni-stuttgart.de](mailto:hc.moehring@ifw.uni-stuttgart.de)

### STC P

**Dimensional metrology based on ultrashort pulse laser and optical frequency comb**

- W. Gao (1) - Contact: [gaowei@cc.mech.tohoku.ac.jp](mailto:gaowei@cc.mech.tohoku.ac.jp)

## 2026 Keynote Paper Proposals

### STC P

**Machine learning in production metrology** - G. Lanza (1) - Contact: [gisela.lanza@kit.edu](mailto:gisela.lanza@kit.edu)

# From the Editorial Committee

(by Prof. S. Kara, EC Chair)

At the Munich General Assembly in August 2021, Erman Tekkaya completed his term as the Chair of the Editorial Committee (EC). As a chair, he not only managed to chair the editorial committee successfully during the COVID-19 related challenges, but he also led the transition of CIRP EC review process to the official Elsevier Editorial Manager system. This was an immense challenge while carrying out other EC Chair duties. As Erman highlighted in the March 2021 CIRP Newsletter, this will bring much needed efficiency, reliability, quality, transparency, and flexibility to the CIRP EC paper review process. As an EC, we sincerely thank Erman Tekkaya for his leadership and contribution to the CIRP EC over the last three years. On a personal level, it was an immense pleasure working with him as a vice-chair during this transition, and I will miss his support and collegiality in the EC.



The Editorial Committee has had only few changes in the last year. With the departure of our chair, Erman Tekkaya, our colleague, Paulo Martins, has joined as a new EC member. In addition, our colleague, József Vancza, has kindly accepted the EC Vice-Chair role. I welcome both in their new role and look forward to working with both, together with the rest of the EC committee, to serve CIRP.

## The 2022 EC review process

With the Elsevier Editorial Manager system having been successfully implemented, the planning of the 2022 paper review process is underway and we are looking forward to the 2022 Winter Meeting. However, the challenges associated with the COVID-19 pandemic still continue, as a result it is not clear if the international travels will be feasible for all EC members to attend the EC meeting in-person during the 2022 Winter Meeting. The mode of meeting will be decided in due course.

## Authorship for keynote papers

In addition, I would like to draw your attention to CIRP's rule on authorship for keynote papers (i.e., the 4-author limit). The CIRP Editorial Committee has been assigned to make the decision on this matter, and only with justification can further author(s) be allowed, on a case-by-case basis. To prevent complication in the future, and to help the CIRP Editorial Committee make its decision in the most effective manner, if a keynote paper must have more than four authors, I strongly urge the lead author to approach the CIRP Editorial Committee, as soon as their keynote paper is approved in their respective STC, with a letter of additional author request, outlining:

- Particular contribution that needs be made by the additional author(s),
- Significance of the contribution to the keynote paper, and
- Most importantly, why the required contribution cannot be made with the existing 4-author team.



# From the CMAG Group

The CMAG meeting was held online on 25<sup>th</sup> of August, during the 2021 General Assembly. Professor Mitsubishi (CIRP President) opened the meeting and warmly welcomed all attendees. He highlighted the urgency and importance of sustainability, including carbon neutrality and green recovery. To provide solutions to this problem, knowledge and information from many different fields are indispensable. Furthermore, he pointed towards the active use of cyberspace, as represented by digital transformation, and advances in physical space as crucial factors. Needless to say, the key lies in profound collaboration between academic and industrial players.

Currently, a new page for sustainability on the CIRP website is under construction, including a slot for education. We are very much looking forward to your contributions with relation to sustainability.

The meeting was well attended, joined by almost 40 persons from all groups of the CIRP family. 10 new Corporate Members were welcomed:

- MTU Aero Engines AG – Germany
- FRAMATOME – France
- Reishauer AG – Switzerland
- MAN Energy Solutions – Denmark
- Oak Ridge National Laboratory – ORNL – USA
- Arcelik A.S. – Turkey
- LMT Tools GmbH & Co. KG – Germany
- Mitsubishi Power Ltd. – Japan
- IND-SPHINX PRECISION Ltd. – India
- Western Digital Corporation – USA

Dr. Fujishima asked CMAG members to focus future activities on the reduction of carbon dioxide emissions, specifically on the following topics:

- Presentation of CO<sub>2</sub> reduction initiatives at the next CMAG meeting
- Submission of ITP about CO<sub>2</sub> reduction research at the next CIRP GA
- Cooperation between industry and academia to reduce CO<sub>2</sub> emission

He continued by giving some examples aligned with these activities, such as the reduction of energy consumption by process integration, coolant-related power consumption, and digitalization.

The technical session started with the presentations of two Industrial Technical Papers (ITPs). After each presentation, the topic was thoroughly discussed on technical basis.

“On-machine tool condition monitoring system using image processing (Makoto Fujishima (3), Kenta Kanto, Junichi Kubota, Masahiko Mori (1) DMGMORI Co., Ltd. Japan)”. Dr. Fujishima (DMG MORI Co. Ltd.) presented the advantages of a new automation support tool for operators to focus on machining with four main functions: automatic 3D model generation of tools, tool diameter and length measurement, detection of tool failure, and precise tool wear measurement.

“Development of a height control system using a dynamic powder splitter for directed energy deposition (DED) additive manufacturing (Masakazu Soshi, Vivian Zhou, Kyle Odum, University of California, Davis, Yoko Hirono DMGMORI Co., Ltd. Japan)”. Prof. Soshi (Univ. California Davis) presented the advantages of a new height control system in power DED in comparison with conventional systems. The proposed system is based on powder flow control.

Next up, Professor Byrne spoke on Biologicalization from the CIRP CWG and showed the newest results of their ongoing research. Biologicalization is intended as a new Industry 4.0 frontier. The above mentioned CWG describes 7 objectives and actions:

- To test whether Biologicalization truly represents a new breaking frontier of Industry 4.0.
- To explore how future manufacturing systems might incorporate features, characteristics and capabilities that converge towards living nature.
- To investigate Biologicalization from the perspectives of bioinspiration, biointegration, and biointelligence.
- To analyze the significance of this development from a future point of view: advanced manufacturing systems in the context of extreme high performance, sustainable manufacturing, circular economy and minimization of energy utilization.
- To define the new terms arising in this emerging area (terminology).
- To collate key international reference literature.
- To consider the commencement of new initiatives in this topic area.

In response to the great importance of this topic for all CIRP STCs, a special issue of the CIRP Journal of Manufacturing was published and a keynote is being planned for 2023.

Finally, Dr. Unai Mutilba (Tekniker) presented “Robotic system performance and accuracy assessment” with emphasis on improving the repeatability and accuracy of industrial robots by means of kinematic and non-kinematic calibration.

Dr. Fujishima thanked all presenters and attendees for their participation and declared the meeting closed.



Dr. M. Fujishima  
Chair



Mr. Yavuz Murtezaoglu  
Vice-Chair



Dr. Luis Uriarte  
Secretary

# From the Research Affiliates

## Message from the RA Steering Committee

Dear Research Affiliates and CIRP Colleagues,

In the past year, the Research Affiliates community has continued collaborating on research, education, and other initiatives mainly remotely. The RA meeting was organized online on Aug 29th and the new RA organizing committee was elected, including Xi Vincent Wang, Alborz Shokrani, and Till Clausmeyer.

Led by Khaled Medini (École des Mines de Saint-Étienne, France) and Thorsten Wuest (West Virginia University, USA), the CIRPe 2021 – 9<sup>th</sup> CIRP global web conference was organized from Oct 26 to 28 with the support of the whole RA community. Eventually, there were 59 papers submitted, 50 accepted and 3 keynote addresses delivered. The CIRPe 2022 conference will be arranged from Oct 25 to 27 next year, led by Amir Malakizadi from Chalmers University of Technology, Sweden.

The RA 2021 workshop was organized by Alborz Shokrani (University of Bath, UK). The workshop included interactive sessions with collecting ideas for future collaborative research. Meanwhile, Aydin Nassehi, a CIRP Fellow member who was a former RA, reported his path through CIRP. The next CIRP RA workshop will be organized by the Germany team, including Till Clausmeyer and Ivan Iovkov from TU Dortmund as well as Peer Woizeschke from BIAS.

We hope both the current and previous RAs enjoy the RA program and look forward to more collaboration within the RA and CIRP community.

The RA Steering Committee



Dr. Xi Vincent Wang  
Chair



Dr. Alborz Shokrani  
Vice-Chair



Dr. Till Clausmeyer  
Secretary

## 9<sup>th</sup> CIRPe Global Web Conference 2021

The 9<sup>th</sup> CIRP Global Web Conference (CIRPe 2021, <https://cirpe2021.sciencesconf.org/>) “Sustainable, resilient, and agile manufacturing and service operations: Lessons from COVID-19” successfully brought together a global audience with high-quality contributions covering a broad range of CIRP related topics. The conference was hosted virtually from October 26 to 28, 2021 by Khaled Medini (Mines Saint-Etienne, France) and Thorsten Wuest (West Virginia University, US). This year 50 research papers were accepted after the peer-review and presented in front of no less than 60 participants throughout the three days of the conference structured in 12 regular sessions covering interdisciplinary topics.



Prof. Bernard during the closing remarks for the conference.

The program included 3 keynote speeches given by world leading scholars:

- Prof. Dr.-Ing. Birgit Vogel-Heuser: “Managed control software evolution as a key success factor to sustainable, resilient, and agile manufacturing and service operation”.
- Prof. Fei Tao: “Digital twin driven smart manufacturing”.
- Prof. Ramy Harik: “Adaptive and agile pharmaceutical manufacturing through cognitive cyber-physical eco-system”.

Two best paper awards were presented based on a competitive selection process conducted in collaboration with an External Awards Committee (Ann-Louise Anderson and Ang Liu) to:

- Eike Schäffer, Marvin Schobert, Tobias Reichenstein, Andreas Selmaier, Volker Stiehl, Markus Herhoffer, Matus Mala, Jörg Franke for their paper “Reference architecture and agile development method for a process-driven web platform based on the BPMN-standard and process engines”.
- Fabio Tondini, Ulfar Arinbjarnar, Alberto Basso, Chris Valentin Nielsen, for their paper “3D printing to facilitate flexible sheet metal forming production”.

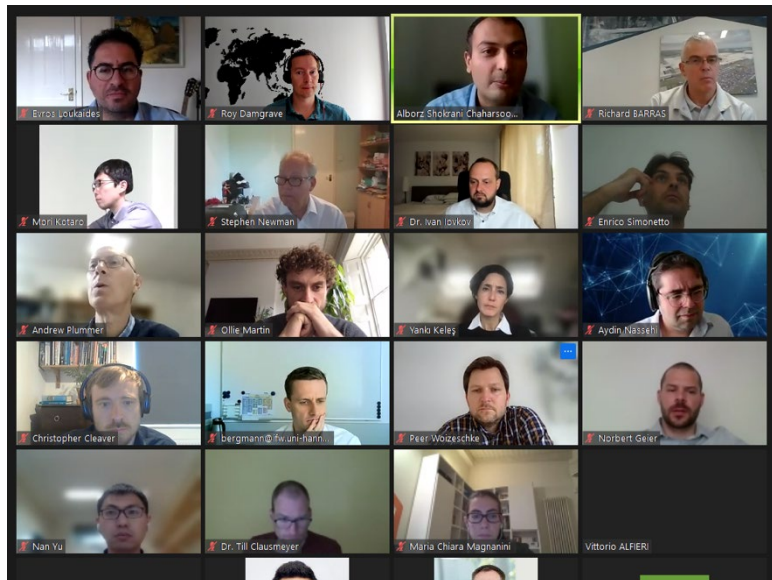
Conference proceedings are already published by Procedia CIRP in open access and are available online: <https://www.sciencedirect.com/journal/procedia-cirp/vol/103>

## 10<sup>th</sup> CIRPe Global Web Conference 2022

The 10th CIRPe Global Web Conference will be held on 25-27 October 2022 with the central theme “Material Aspects of Manufacturing Processes”. The conference chairs are Amir Malakizadi, Peter Krajnik and Danfang Chen, and the organizing institute is the Department of Industrial and Materials Science, Chalmers University of Technology, Gothenburg, Sweden. The conference is still in the planning stage and the program will be released in February 2022.

## 13<sup>th</sup> CIRP RA Workshop 2021

The CIRP Research Affiliate Workshop 2021 with a theme of Intelligent and Sustainable Manufacturing was organized by Alborz Shokrani and Evripides Loukaides at the University of Bath on 25 June. Due to the ongoing COVID-19 restrictions, the workshop was organized online. The workshop was well received by the RA community with 34 attendees at the peak. The Research Affiliates were welcomed by Prof. Andrew Plummer, Head of Mechanical Engineering Department, University of Bath and Prof. Stephen Newman, CIRP Fellow. It was followed by a presentation by Prof. Aydin Nassehi on his journey from a Research Affiliate to becoming a CIRP



member. Industrial presentations on intelligent and sustainable manufacturing were delivered by representatives from Renishaw plc, Nissan UK and INSPHERE Ltd. followed by an introduction to the EU Horizon research program. This was continued by interactive discussions between participants to generate new ideas based on a series of selected themes. The workshop was concluded by participants voting on the best research ideas related to the selected themes.

## **Save the date for the 14<sup>th</sup> CIRP RA Workshop 2022**

The next RA Workshop will be held in Dortmund from May 19 until May 20, 2022. The plan is to have a physical meeting with a lab and local plant tour. The tentative topic is: "Manufacturing for our children: technology and engineering education".

Prof. A. Erman Tekkaya, Director of the Institute for Forming Technology and Lightweight Construction (IUL), TU Dortmund, and Prof. Dirk Biermann, Head of Institute of Machining Technology (ISF), TU Dortmund support the event.

Local organization is composed of Ivan Iovkov, Institute of Machining Technology (ISF), TU Dortmund, Peer Woizeschke, BIAS - Institute of Applied Beam Technology, Bremen, and Till Clausmeyer, Institute and Forming Technology and Lightweight Components (IUL), TU Dortmund.

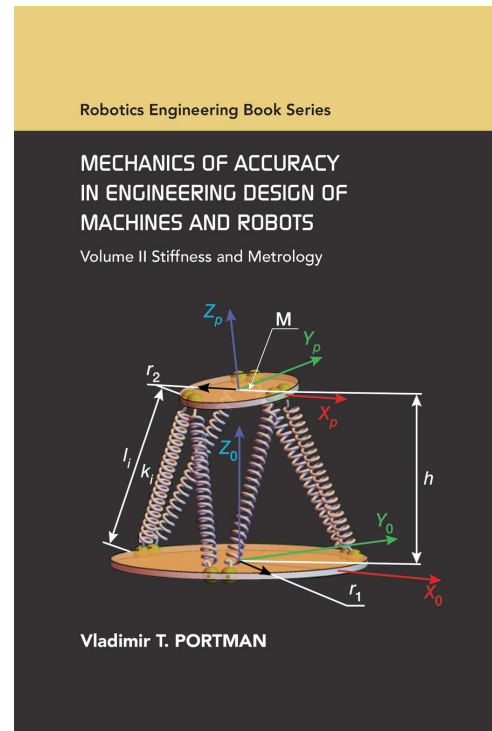
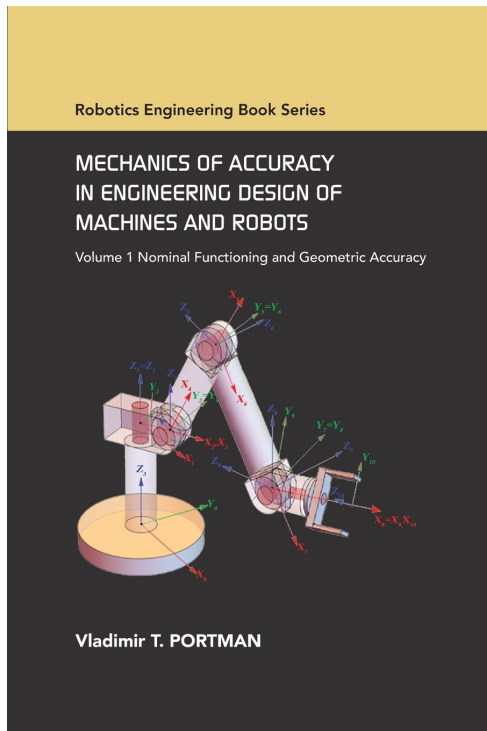
# New books from our members

## Mechanics of Accuracy in Engineering Design of Machines and Robots,

Volume 1: Nominal Functioning and Geometric Accuracy

Volume 2: Stiffness and Metrology

by Vladimir T. Portman



Accuracy is one of the fundamental characteristics and one of the most important indexes of the quality of machines and robots. Accuracy provision, maintenance, and enhancement are permanently hot problems in modern manufacturing and manufacturing science.

The book is published in two volumes and comprises the Introduction and four parts including 18 chapters with consecutive numbering, and three appendices. Each part combines a theoretical chapter with applications to machines and robots with different kinematic types. The formalized consideration is accompanied with application examples, which, as a rule, are explained with numerical solutions using realistic initial values.

Volume 1 includes Introduction, Parts I and II (Chapters 1-12), and hence, embraces the general accuracy definitions, nominal machine functioning models, and geometrical accuracy problems.

Volume 2 includes Parts III and IV and is available separately. Volume 2 continues consideration of the accuracy-related problem as applied to machines and robots

started in Volume 1. Two themes are developed in Volume 2: stiffness-compliance directly associated with the machine and robot accuracy through static deformations (Part I) and computer-aided metrology aimed at final assessments of the accuracy-associated performance indexes (Part II).

Volume 2 is written as a standalone book in its own right and can be used without access to Volume 1. The book is intended for machine and robot designers and researchers, university graduate and senior undergraduate students, and their instructors.

The problems discussed in both volumes hold significant interest related to the mechanics of machines and robot accuracy. In spite of the physical diversity of the considered problems, they are integrated by the application of a unique methodology in both volumes. The methodology is based on the models of the nominal functioning of the machines, whose small disturbances result in geometrical accuracy and stiffness-compliance problems. The matrix technique for engineering problem formulation and the computer software system for effective solution in parallel with overcoming mathematical and technical difficulties are applied for the considered problems.

<https://asmedigitalcollection.asme.org/ebooks/book/56/Mechanics-of-Accuracy-in-Engineering-Design-of>

<https://www.asme.org/publications-submissions/books/find-book/mechanics-accuracy-design-machines-robots-vol-2>

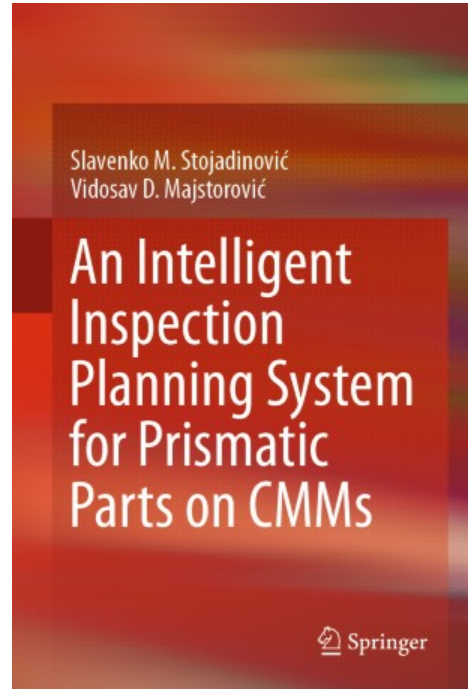
<https://www.amazon.ca/Mechanics-Accuracy-Engineering-Design-Machines/dp/0791861619>  
<https://www.amazon.ca/Mechanics-Accuracy-Engineering-Design-Machines/dp/0791861694/>



# An Intelligent Inspection Planning System for Prismatic Parts on CMMs

by Slavenko M. Stojadinović, Vidosav D. Majstorović

This book introduces a new generation of metrological systems and their application in a digital quality concept. It discusses the development of an optimal collision-free measuring path based on CAD geometry and tolerances defined in knowledge base and AI techniques, such as engineering ontology, ACO and GA. This new approach, combining both geometric and metrological features, allows the following benefits: reduction of a preparation time based on the automatic generation of a measuring protocol; developed mathematical model for the distribution of measuring points and collision avoidance; the optimization of a measuring probe path; the analysis of a part placement based on the accessibility analysis and automatic configuration of measuring probes. The application of this new system is particularly useful in the inspection of complex prismatic parts with a large number of tolerances, in all of types production. The implementation is demonstrated using several case studies relating to high-tech industries and advanced, non-conventional processes.



<https://link.springer.com/book/10.1007/978-3-030-12807-4>

<https://www.amazon.ca/Intelligent-Inspection-Planning-System-Prismatic-ebook/dp/B07NKDRD9F>

# 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

- We kindly remind CIRP Fellows, Honorary and Emeritus, that they can propose candidates for Fellow or Associate membership up to December 1<sup>st</sup> 2021 (Nominations Forms available online through your Dashboard).
- From 2022 onwards, all the authors of CIRP Annals who are not members will be allowed to buy the CIRP Annals in which their article is published, at the CIRP member price. This will be extended to former CIRP Annals too (info on the [authors' page](#)).
- Since Elsevier stopped its Procedia publications except our Procedia-CIRP for CIRP Conferences, organizers of CIRP Sponsored Conferences can now publish on SSRN (info on the [conferences page](#)).
- All information for the next Winter Meetings is provided online on our Website.

## Future CIRP Meetings

- Dates of the [future CIRP Winter Meetings](#) 2022 - 2025
- Dates of the [future CIRP General Assemblies](#) 2022 - 2025