The International Academy for Production Engineering

NEWSLETTER

N° 69 – August 2025

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Contents

From the President

Dear Colleagues,

I am very much looking forward to the upcoming 74th CIRP General Assembly in Stockholm – a traditional venue for our academy and an inspiring setting for personal exchanges, and not only because the Nobel Prizes are awarded there every year!

Engineering and ingenuity have been part of Sweden's development since the early days of industrialization, laying the groundwork for the 19th century industrial society. This history continues to influence Sweden's role in manufacturing and innovation today. With a relatively small population, and as a country that has stayed out of conflicts since 1809, Sweden developed a tradition for self-reliance in design and manufacturing. This shaped a practical approach to technology development and industrial growth. Despite its size, Sweden has highly successful companies engaged in a variety of manufacturing sectors, such as automotive and rail transportation, machinery components, aerospace and aviation, shipbuilding, pharmaceuticals, and telecommunications. This broad industrial base reflects Sweden's focus on technical excellence and collaboration between industry and research institutions.

A unique aspect of Sweden worth mentioning is its work culture and the way collaboration takes place. Sweden's collaborative innovation model, often called the "triple helix", is based on strong, ongoing networks between government, academia, and industry. This model has been fundamental to Sweden's manufacturing and technological development since the 1940s. The triple helix model emerged out of post-war necessity, as Sweden sought to rebuild and strengthen its industrial base. It matured over the 20th century into a structured system, where government, academia and industry play clear but interdependent roles. What makes this system unique is the Swedish culture of openness, trust, and consensus building, which enables efficient knowledge sharing and decision making across these sectors.

I know we are all looking forward to learning more about Sweden during our week in Stockholm. The preparations for the GA are already showing how lively and committed our community is, and how much further CIRP is developing as a platform for research excellence and international cooperation.

This further development was clearly noticeable last year. The Winter Meetings in Paris offered a productive platform for scientific and technical exchange, with high caliber content and enthusiastic engagement from the participants. Once again, it became

clear what makes our academy so special: collegial cooperation, direct dialogue, and working together on future topics.

CIRP's structural development is also progressing steadily. The Academy increasingly sees itself as a “working academy” – a place where knowledge is not only published, but also jointly developed, critically reflected upon, and embedded in industrial and social contexts. This self-image thrives on the active participation of all members.

Simultaneously, the visibility of our work in the professional world and beyond is becoming increasingly important. Under the guiding principle of “Open CIRP”, the Board and Council have taken targeted steps to strengthen the Academy's presence in the digital world, and with renewed multimedia.

Particularly noteworthy is the expansion of our LinkedIn channel, which has developed into a lively forum for insights into our conferences, projects, and publications. We cordially invite you to follow the channel, share posts, and actively contribute to the external presentation of CIRP. The editorial team of the LinkedIn channel welcomes input from the community, be it highlights from working groups, personal CIRP moments, or information on the latest developments from the scope of CIRP activities. Please send your suggestions for contributions to: content@cirp.net.

“Open CIRP” stands for more than just digital visibility. It describes open, internationally networked science – across disciplinary and national borders. In this context, promotion of academic freedom is not just an ideal, but a concrete obligation. Our academy thrives on free scientific exchange among scientists from different countries, backgrounds, and identities. The diversity of the CIRP community opens up new perspectives, deepens international dialogue, and increases the social relevance of our work. Cultivating this open dialogue, promoting international cooperation, and ensuring access to knowledge for all is a shared vision to which we can all contribute.

A central project that aims to enable this vision is the “Future Publishing” initiative. The objective is to modernize the publication structure of the *CIRP Annals - Manufacturing Technology*. Over a period of five years, a dedicated task force has worked with the CIRP community to develop a viable concept, and has given detailed presentations and conducted town hall meetings. The recommendations of the Task Force, while retaining many of the existing regulations and practices of CIRP on membership, publication, and presentation, target further strengthening the scientific quality and impact of CIRP through an open publication model, which will continue to bear the “CIRP stamp” of excellence. These recommendations are also expected to broaden our academy's visibility and reach to new target groups – particularly young researchers, worldwide. In developing the roadmap for CIRP’s future publishing, I would like to thank the members of the Task Force, and all of you (CIRP members and RAs) who have shared your perspectives and suggestions with them, through an open, transparent, and collaborative engagement process they have led.

The Task Force’s recommendations will be presented for approval through an electronic vote, which will be organized during the General Assembly (GA) in Stockholm. Following the Internal Regulations of CIRP, I invite all Fellows and Honorary Fellows to please participate in this e-voting process.

Dear readers, dear CIRP members and RAs, the initiatives outlined here illustrate the many ways in which our academy is evolving - in terms of its activities, structure, and communications. My sincere thanks go to all those who contribute to the Academy's success with their commitment - the members of the Board, the Council, the committees and working groups, our academic and corporate members, and our RAs. You all make an indispensable contribution to the excellence and open exchange that CIRP stands for!

The upcoming 74th CIRP General Assembly, which will take place from August 17 to 23, 2025 will provide a direct impression of our academy's development. Stockholm is a traditional host of our academy. The city hosted the General Assembly in 1957 and 1972. Memories of this are recorded in the book: *Forty Years of CIRP (1951-1991)*, which include a legendary meeting with King Carl XVI Gustaf and the reception in Stockholm City Hall where the Nobel Prizes are traditionally awarded. This year, too, we can expect an excellent scientific program and the special atmosphere of a city with a long-standing academic tradition. A big thank-you to the organizing team around Professor Lihui Wang, who are preparing the event with immense commitment. The foundations for a successful meeting are currently being laid, and I am convinced that Stockholm will both build on the tradition of previous General Assemblies, and provide new impetus for the future of CIRP.

I hope you enjoy reading the 69th CIRP Newsletter, and I look forward to seeing you again in person in Stockholm!

With best regards,

Berend Denkena
President of CIRP 2024-2025

From the Editor

Dear CIRP colleagues,

Once again, warm greetings from Canada! It is always a privilege for me to connect with you via the CIRP Newsletter. It was wonderful to see so many friends and colleagues at the 2025 CIRP Winter Meeting in Paris. We now look forward to our next gathering for scientific discussions and exchange of ideas at the upcoming 2025 General Assembly in Stockholm.

As the Editor of the CIRP Newsletter, 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 brief report (with highlights, pictures, etc.), to be featured in the Newsletter. The material can be sent to the CIRP office (cirp@cirp.net) or directly to myself (kaane@uwaterloo.ca).

With my best regards,

Kaan Erkorkmaz
CIRP Technical Secretary

CIRP Winter Meetings 2025

The Winter Meetings of CIRP took place during February 2025 at “La Mutualité” meeting center in Paris. The event was attended by 222 academic members, 77 corporate members, 44 RAs, and 63 guests. The Winter Meetings provide an ideal opportunity for the CIRP community and their guests to participate in STC and CWG technical presentations and to engage in lively discussions. The minutes of from the STC and CWG meetings can be found at: https://www.cirp.net/scientific-groups.html.

From the Editorial Committee

(by J. Váncza, EC Chair)

This year, just before the Winter Meeting, the Editorial Committee (EC) convened at the Collège des Bernardins, a former Cistercian college of the University of Paris. This venue certainly provided inspiration for our editorial activities. It was a genuine pleasure to collaborate face-to-face with EC colleagues. As a general rule, each paper was reviewed by four colleagues: two STC Officers and two EC members. Several CIRP colleagues were also invited to review specific papers requiring specialized expertise. The review process was highly efficient, with all evaluations completed just in time for the final decision-making stage.

The Editorial Committee had in the last year several changes. Together with our former Chair Sami Kara, our colleagues Kaan Erkorkmaz, Jane Xiangqian Jiang, and Rachid M'Saoubi left the Editorial Committee, while new members Erhan Budak, Alkan Donmez, Hans Nørgaard Hansen and Jörg Krüger entered. Once again, I would like to sincerely thank the earlier EC members for their service and our new EC colleagues for taking on this responsibility and carrying out their work with such precision, endurance, and collegiality. This year, Don Lucca completed his final term of office, having worked in the EC for a total of sixteen years, with some breaks. We owe him a great deal for his outstanding and tireless contributions, as well as for preserving our traditional values. The CIRP Office provided continuous and efficient assistance with all the administrative and organizational aspects of our work, acting as invisible hands. I would like to thank Chantal Timar-Schubert and Violaine Baudin personally for this, with Violaine taking over Chantal's responsibilities step by step.

The 2025 EC review process

The 2025 paper submission and review process has been managed completely through the Elsevier Editorial Manager System, which provided as in the earlier years well-proven, efficient, and transparent services for the handling and publication of our papers in the Annals. A total of 262 regular paper submissions were received in 2025, which is a 10% increase on the previous year. The distribution of submissions per STCs also changed substantially, as shown in the table below.

STC	Papers in 2024	Papers in 2025	Change
A	19	27	42%
C	29	29	0%
Dn	17	25	47%
E	48	39	-19%
F	19	23	21%
G	15	17	13%

M	22	29	32%
O	27	32	19%
P	19	23	21%
S	24	18	-25%
Total	**239**	**262**	**10%**

25 submissions were cooperative work papers, and 36 submissions have been sponsored. Taking also the 11 keynotes into account, on average 43 reviews have been performed by each member of the Editorial Committee. In addition, the STC Chairs, Vice-Chairs and, on occasion, Secretaries reviewed the submissions in their respective STCs. Hence, as usual with CIRP Annals papers, every paper received four independent peer reviews. Following the standard routine of our publisher, each paper was individually screened for original content using iThenticate. This year the iThenticate scores ranged from 2% to 48%. Papers with an iThenticate score above 25% were carefully checked, with some being rejected due to their unacceptable similarity to existing publications. Papers that made only a marginal contribution to previously published work were also not accepted. All in all, 52% of the submitted papers have been provisionally accepted; the acceptance rates over the STCs varied between 38% to 66%. Note that as in the previous years, papers were judged purely on their scientific quality, regardless of the number of GA presentation slots available.

STC	Accept	Reject	Accept %	Total	Accept % in 2024
A	13	14	48%	27	42%
C	14	15	48%	29	45%
Dn	12	13	48%	25	35%
E	20	19	51%	39	49%
F	13	10	57%	23	58%
G	10	7	59%	17	60%
M	19	10	66%	29	59%
O	12	20	38%	32	33%
P	15	8	65%	23	53%
S	8	10	44%	18	50%
Total	**136**	**126**	**52%**	**262**	**48%**

This year there have been changes in the call for papers: our authors could submit longer papers, dedicating half of the fifth page of regular papers to references. We also encouraged the addition of supplementary materials. Overall, approximately 75% of the submissions used the additional half-page for references, but only a few provided supplementary materials or links to external sources.

A new schedule for the keynote reviews was introduced to distribute the reviewers' workload more evenly and bring forward the publication of keynote papers. Therefore, we could check the first revisions at the time of the EC meeting, and the final approval

for publication could be given by the end of April. Currently, all keynotes have been published, and some have already started to collect citations.

I would like to remind all colleagues that CIRP Annals keynotes are the result of careful collaborative work conducted within our CIRP community, over many years, defining new fields in manufacturing and future directions of research. This is in addition to them being among the highest quality and information-rich reviews of state-of-the-art and foundational knowledge in carefully chosen production engineering topics.

As a result, our keynotes serve as perfect entry points for newcomers to the field, as well as comprehensive and up-to-date manuscripts that guide leading experts. Hence, I strongly encourage manufacturing researchers and engineers, especially those affiliated with CIRP, to utilize and benefit from the knowledge and expert vision conveyed in our CIRP Annals Vol. 2 keynote papers in their research and technology development activities.

Our future publications

As mentioned already in previous EC reports, in 2020 the CIRP Council created a task force to develop our future publication strategy. Over the course of several stages and with the involvement and contributions of a number of colleagues, the actual Task Force has developed a proposal that has already been discussed widely within our community. Recommendations of the task force will be summarized at the 74th CIRP General Assembly in Stockholm. Herewith, I kindly ask Fellows and Honorary Fellows to contribute to the ensuing decision by electronic voting, regarding the proposed changes to the publication process of the CIRP Annals. Please remember that the CIRP Annals is not only a record of our history, but also a foundation for our future.

Visit by the CIRP President Prof. Berend Denkena to the Editorial Committee at Collège des Bernardins during reviews of the 2025 CIRP Annals papers.

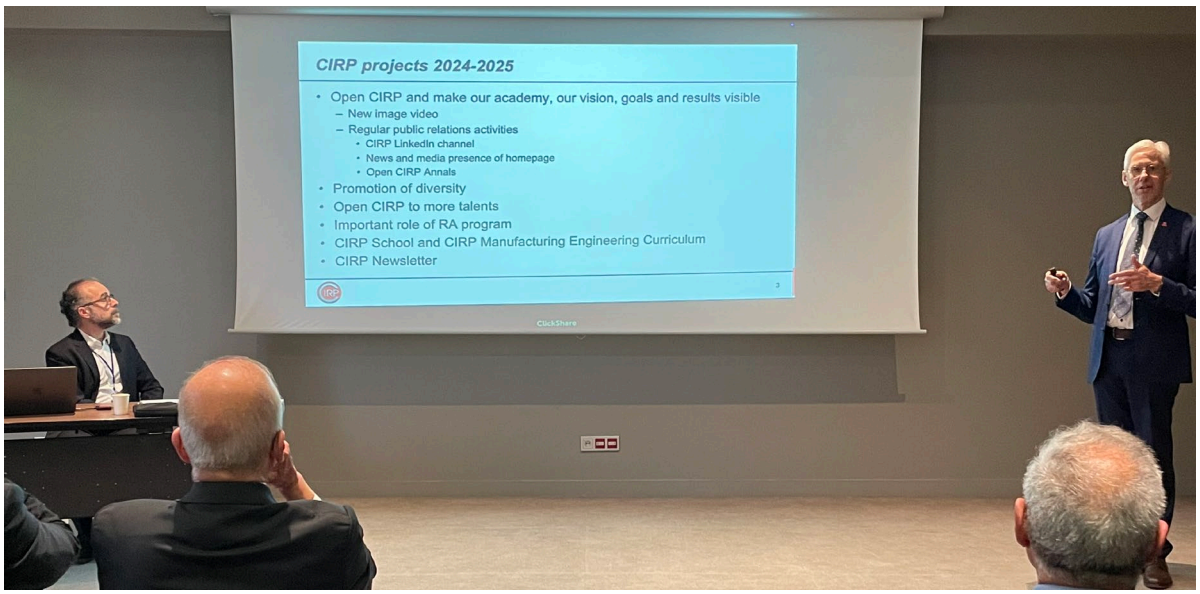
From the Corporate Members Advisory Group (CMAG)

Dr. Yavuz Murtezaoglu
Chair

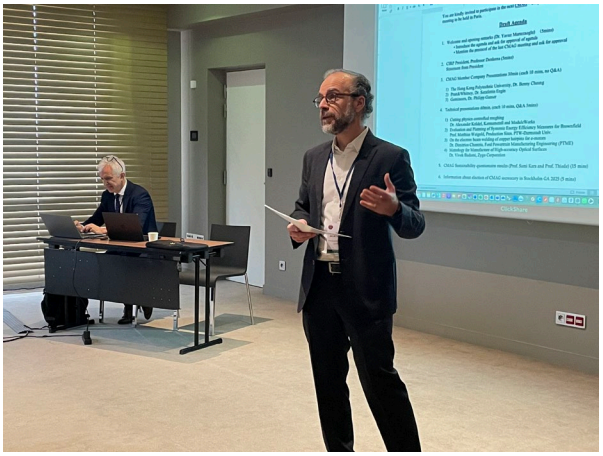
Dr. Luis Uriarte
Vice-Chair

Dr. Youichi Nonaka
Secretary

The Corporate Members Advisory Group (CMAG) meeting took place on February 20th in Paris during the 2025 CIRP Winter Meetings. After the opening by the Chair Dr. Murtezaoglu, the meeting started with the address of the CIRP President Prof. Berend Denkena, who shared information about on-going activities towards “Open CIRP”. These included enhancing CIRP’s LinkedIn channel, a new introduction video, as well as long-term initiatives, such as the CIRP School, CIRP’s Manufacturing Engineering Curriculum, the modernization of CIRP’s publication channels, as well as further efforts to the broaden the reach, presence, and impacts of our academy, by making CIRP better known to more talents from around the world.



Following the President’s address, our CMAG meeting featured three company presentations and four technical presentations.



The company presentations were:

1. The Hong Kong Polytechnic University (PolyU), by Dr. Benny Cheung
A major goal of PolyU is to develop and transfer technology to industry. PolyU has capabilities in ultraprecision machining, ultraprecision metrology, precision injection, and compression molding, with the following five research priorities:

- Micro-nano machining mechanisms for difficult-to-machine materials
- New theories, technologies, and processes in ultra-precision machining
- Ultra-precision complex surface metrology
- Development of ultra-precision machining equipment
- Precision manufacturing and applications of advanced optics and functional surfaces

2. Pratt & Whitney Canada (P&WC), by Dr. Serafettin Engin
Dr. Engin gave a company overview of P&WC, including pathways to help decarbonize aviation. Information about new generation engines was presented, with context to fuel efficiency and emission levels. Industry 4.0 state-of-the art technology is used to produce and service advanced aerospace products. Activities of the P&WC innovation center were highlighted, including physical trials, process development, and equipment development.

3. gemineers, by Dr. Philipp Ganser
Dr. Ganser presented the goals of their digital twin platform, tailor-made for CNC manufacturing. It is based on three main elements:

- Data connector: achieving plug & play data acquisition, delivering real-time, high-frequency data from common controls and sensors for each NC operation.
- Technology core: featuring advanced physical algorithms, translating machine data into precise digital twins of processes and products. For example, it allows 3D calculations considering position errors, deflections, tool wear etc.

- Data hub: is an intuitive web platform for managing digital twins, where all process and product data converge, giving information about the part quality, process efficiency, energy demands, etc.

Dr. Ganser concluded by presenting the research collaboration topics of interest for Gemineers with the CIRP community, , such as expanding the digital twin with respect to its covered characteristics and technologies, and enabling its interoperability both within and across company boundaries.

The technical presentations during our CMAG meeting were:

1. Cutting physics-controlled roughing, by Dr. Alexander Krödel, Kennametal and ModuleWorks

The motivation of this work is to close the gap between research in virtual machining optimization, and the state of industrial practice, in which 90% of the customer base relies on trial-and-error supported by empirical know-how. Most of the required information for virtual machining is available in end-user CAM systems. By combining cutting force modeling with the tool geometry and cutting conditions, the SmartRoughing system is able to generate optimized toolpaths. The presentation also featured case studies. Future development steps were also discussed, like incorporating chatter stability prediction, and broadening the categories of tooling.

2. Evaluation and planning of systemic energy efficiency measures for brownfield, by Prof. Matthias Weigold, Production Sites, PTW-Darmstadt University.

The motivation arises to answer the question: which approaches enable the identification, design, and evaluation of systemic energy efficiency measures in brownfield production environments? The following four steps were followed to find a solution: i) Brownfield production system modeling, ii) Final energy demand aggregation, iii) Supply system interdependencies, and, iv) Optimal efficiency measures. The methodology has been applied to Heidelberger printing machines. The simulation results can be either for individual components, or the overall system, and reveal the coupling possibilities between pumps, heaters, storage systems.

3. On the electron beam welding of copper hairpins for e-motors, by Dr. Dimitrios Chantzis, Ford Powertrain Manufacturing Engineering (PTME).

Laser welding is globally adopted by automotive OEMs for joining hairpin windings. However, there are still some challenges in laser welding, such as:

- Copper's high reflectivity in the infrared spectrum can result in inefficient absorption of laser energy.
- Although blue and green lasers demonstrate higher absorption rates, they are currently limited by the available power.
- Porosity and insufficient depth of welding.
- Laser welding is sensitive to vertical and horizontal offset, and in general is sensitive to all noise factors and contamination.

Electron beam welding (EBW) is a promising alternative to overcome such laser welding limitations. EBW is unaffected by copper reflectivity, and the absence of atmospheric gases avoids porosity. EBW is highly tolerant of vertical offset and hairpin gaps, and exceeds production specifications in terms of tensile load, weld depth, and porosity. However, R&D is required focus on machines, monitoring systems, and process development.

4. Metrology for manufacture of high-accuracy optical surfaces, Dr. Vivek Badami, Zygo Corporation.
Spectral content of form optics affects their optical performance. GD&T callouts are used to control the form of metal parts. However, high-quality optics typically have a specification on the spectral content for the allowable error. The challenges in optics measurement are explained to fulfill the need for up to sub-nm metrology. To summarize:

- The spatial frequency content of the surface shape of an optic influences various aspects of its optical performance.
- High quality optics typically place limits on the spectral content of the surface error using measures like the power spectral density (PSD).
- The band limited performance of the measurement tools often requires multiple measurement techniques to span the full frequency range.
- Using these techniques, it is possible to produce optics with sub-nm error over wide spatial frequency ranges.

The presentations in CMAG received enthusiastic comments and questions from the attendees, composed of corporate and academic members of CIRP.

During the meeting, Prof. Kara and Prof. Thiede also informed CMAG members that the sustainability questionnaire is still open, and encouraged the audience to participate.

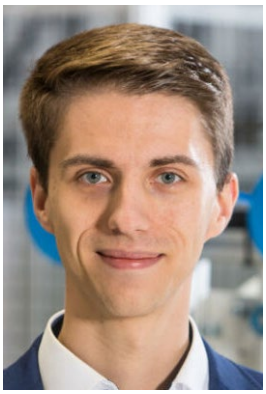
After the presentations, the CMAG Chair Dr. Murtezaoglu announced that CMAG will continue to focus on key topics, such as automation, digitalization, diversity, and sustainability.

Our next meeting will be held in Stockholm, Sweden. We're looking forward to seeing you there!

From the Research Affiliates

Message from the RA Steering Committee

Prof. Nanya Li
Chair



Dr. Benjamin Montavon
Vice-Chair

Prof. Haizea Gonzalez Barrio, Secretary

Dear Research Affiliates, dear CIRP Colleagues,

It was great to be able to meet and interact with colleagues and friends at the CIRP Winter Meeting in Paris. This network initiated cooperative works and publications, also taking the new CIRP Novel Topics in Production Engineering format into account. Another focus was joint review papers and the collaborative use of internationally exceptional lab equipment.

2025 RA meeting at the CIRP Winter Meeting in Paris, France.

The RA meeting in Paris was held with 39 attendees and gave opportunity to 16 new RAs to introduce themselves. The CIRP President Prof. Denkena welcomed the attendees and emphasized the importance of young researchers actively contributing to the CIRP community. He presented the new video and media presence homepage and encouraged RA members to send news items to the CIRP Media Content group. He highlighted CIRP's commitment to promoting diversity, attracting new talent, and

emphasized the importance of the RA program. These efforts reflect CIRP's commitment to innovation, inclusivity, and the development of future leaders in manufacturing engineering. The RA meeting continued with reporting from the RA board, CIRP RA workshops, CIRPe conferences, and RA collaborating working groups.

The RA Board also met with the CIRP Office. This creates an opportunity to voice any concerns brought forward by the RAs. A recent example was the adjustment of RA program durations based on eligible parental and similar caregiving / medical leaves, which has now been approved by the CIRP Council. During this meeting, the RA Board also appreciated the opportunity to discuss their views on outreach and visibility of CIRP. Eventually, the RA Steering Committee looks forward to further developing the network and pushing its synergies forward.

The RA Steering Committee.

17th CIRP RA Workshop 2025

Approved at the CIRP GA, our next RA workshop will gather in Chalmers University of Technology's Virtual Development Laboratory in Gothenburg, about 470 km southwest of Stockholm, immediately after the CIRP GA in Stockholm concludes.

Program highlights

- **Sun 24 Aug (14:00–17:00)** – Welcome reception and Paddan-boat sightseeing tour.
- **Mon 25 Aug (08:00–21:00)** – Opening session, SKF bearing-plant visit, Keynote I, evening at the new *World of Volvo* museum and dinner at *Ceno on Top*.
- **Tue 26 Aug (08:00–17:00)** – Volvo Trucks final-assembly tour, Keynote II, collaborative work session and closing.

Across the three days, participants will exchange the latest research, see Swedish manufacturing excellence first-hand, and work together in a state-of-the-art virtual-development environment.

Organising committee: Dr. Roham Sadeghi Tabar & Dr. Amir Malakizadi (Chalmers), Prof. Peter Krajnik, Prof. Rikard Söderberg, and Dr. Tomas Gustavsson (SKF).

We look forward to welcoming the RA community to late-summer Gothenburg!

Save the date for the 18th CIRP RA Workshop 2026

Prof. Nanya Li and Dr. Marvin Carl May presented an update of their proposal for the RA Workshop **2026 to be hosted in Nanjing and Suzhou** in China. The workshop is planned for June 22-27, 2025. The preliminary program was scheduled and included the visit of local companies. **The proposal has been approved with full votes.**

13th CIRPe Global Web Conference 2025

This conference will explore cutting-edge applications of AI within the advanced manufacturing domain, uncovering the benefits of AI models in process optimization, predictive maintenance, prescriptive quality control, and atomic and close-to-atomic scale manufacturing (ACSM). It is expected that AI-powered smart manufacturing will have transformative impacts on productivity, efficiency, and will also streamline complex workflows. The conference will be held using Zoom meeting on October 16-18, 2025. Several symposia are planned, which will offer the RAs the opportunity to participate in, as well as chair, the individual symposia. Six papers will be selected for the “Best Paper Award” of the CIRPe 2025, comprising of one First Prize, two Second Prize(s), and three Third Prize(s).

Awards

Dr. **Sara Shafiee** received the Agnes & Betzy Award by the Danish Society of Engineers (IDA) at the Danish Diversity Awards 2025. Sara Shafiee has received this award for co-founding DivERS, a company that with the help to remove biases in AI-based job screening processes. This paves the way for a more fair and equal recruiting process.

Professor **Bey Vrancken** (Department of Mechanical Engineering, Division of Manufacturing Processes and Systems (MaPS), Additive Manufacturing Research Group and Leuven.AM) received the prestigious International Outstanding Young Researcher in Freeform and Additive Manufacturing Excellence award (junior FAME award) on August 11, 2024 in Austin, Texas, USA, which is “awarded annually in recognition of an exceptional young researcher in the field of 3D printing”. Professor Vrancken is the 16th laureate to receive this prestigious international award.

CIRP Keynote Papers

Our keynote papers are the result of an intensive collaboration between specialists working together during several years within an STC or CWG. They become impactful 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.

2025 Keynote Papers submitted

STC A
Human-centric assembly in smart factories - L. Wang (1) -
Contact: lihui.wang@iip.kth.se

STC C
Revisiting machinability assessment: Towards total machining performance -
I.S. Jawahir (1) - Contact: is.jawahir@uky.edu

STC Dn
Developing and leveraging digital twins in engineering design - N. Anwer (2) -
Contact: nabil.anwer@ens-paris-saclay.fr

STC E
Metal multi-material additive manufacturing: Overcoming barriers to implementation -
A. Clare (2) - Contact: adam.clare@nottingham.ac.uk

STC F
Cut the scrap: making more use of less metal - J. Allwood (1) -
Contact: Allwood-Office@eng.cam.ac.uk

STC G
Advances in magnetic-field assisted finishing - H. Yamaguchi (2) -
Contact: hitomiy@ufl.edu

STC M
Fixtures and workpiece clamping systems in machining - H.C. Möhring (2) -
Contact: hc.moehring@ifw.uni-stuttgart.de

STC O
Future-proof production scheduling and control - M. Urgo (2) -
Contact: marcello.urgo@polimi.it

STC P
Dimensional metrology based on ultrashort pulse laser and optical frequency comb - W. Gao (1) - Contact: gaowei@cc.mech.tohoku.ac.jp

STC S
Surface finishing by shape-adaptive processes - J. Yan (2) -
Contact: yan@mech.keio.ac.jp

Cross-STC
Production technologies and systems for electric mobility – J. Fleischer (1) –
Contact: juergen.fleischer@kit.edumailto:Joerg.Franke@faps.fau.de

2026 Keynote Paper proposals

STC A
Decarbonisation of manufacturing towards net zero - S. Thiede (2) -
Contact: s.thiede@utwente.nl

STC C
Part distortion in machining: prediction, measurement, and control - J. Outeiro (1) -
Contact: jose.outeiro@ensam.eu

STC Dn
Industrial Metaverse for future factory design and operations - D. Mourtzis (1) -
Contact: mourtzis@lms.mech.upatras.gr

STC E
Laser based manufacturing for electric traction and energy storage systems: State of the art and new challenges - A. Fortunato (3) –
Contact: alessandro.fortunato@unibo.it

STC F
Shear-dominated processes and mechanics in forming and blanking - W. Volk (1) –
Contact: wolfram.volk@utg.de

STC G
Abrasive finishing of components made by additive manufacturing - J. Aurich (1) –
Contact: jan.aurich@mv.uni-kl.de

STC M
Digital twins for machine tools - A. Verl (2) –
Contact: alexander.verl@isw.uni-stuttgart.de

STC O
Digitally optimised maintenance: path towards automation - J. Erkoyuncu (2) –
Contact: j.a.erkoyuncu@cranfield.ac.uk

STC P
Machine learning for metrology in manufacturing - G. Lanza (1) –
Contact: gisela.lanza@kit.edu

STC S
Manufacturing of structured surfaces for tissue engineering and regenerative medicine - G. Lucchetta (2) -
Contact: giovanni.lucchetta@unipd.it

Cross-STC
Semiconductor and microelectronic manufacturing - A. Shih (1) –
Contact: shiha@umich.edu

2027 Keynote Paper proposals

STC A
Humans, AI and robots for resilient assembly operations – S. Makris (2) –
Contact: makris@lms.mech.upatras.gr

STC C
Advanced methods for application and modelling of cooling lubricants in metal-cutting processes - D. Biermann (1) -
Contact: Biermann@isf.de

STC Dn
Generative design in additive manufacturing: A comprehensive review of computational methods, tools and applications – Y. Zhang (2) –
Contact: yicha.zhang@uphf.fr

STC E
Interlayer reinforced domains enabled by additive manufacturing – M. Sealy (2) –
Contact: msealy@purdue.edu

STC F
Tube forming and processing technologies for a sustainable society – T. Kuboki (1) –
Contact: kuboki@mce.uec.ac.jp

STC G
AI-enabled smart abrasive machining - Y. Guo (1) –
Contact: yuebin.guo@rutgers.edu

STC M
Machining of thin walled features - L.T. Tunc (2) -
Contact: tanertunc@charlotte.edu

STC O
Cybersecurity for the emerging manufacturing networks - S. Bukkapatnam (2) –
Contact: satish@tamu.edu

STC P
Optical measurement on machines – J. Mayr (2) –
Contact: josef.mayr@inspire.ch

STC S
Traceability and uncertainty of characterisation of mechanical properties of technological surfaces – M. Galetto (2) –
Contact: maurizio.galetto@polito.it

Cross-STC (C, E, F)
Microstructure-driven design of forming, additive manufacturing and cutting operations: past, present and future – L. Madej (1) –
Contact: lmadej@agh.edu.pl

2028 Keynote Paper proposals

STC C
Role of additive manufacturing in cutting – M. Weigold (2) –
Contact: weigold@ptw.tu-darmstadt.de

STC E
In space manufacturing (ism): Quo vadimus, a production engineer's perspective – A. Malshe (1) -
Contact: amalshe@purdue.edu

STC G
Abrasive processes towards manufacturing for sustainability - **progress and challenges -** E. Da Silva (2) –
Contact: eraldojs@sc.usp.br

STC M
From reactive maintenance to prescriptive maintenance - S. Ihlenfeldt (2) –
Contact: buero.ihlenfeldt@iwu.fraunhofer.de

STC P
Traceability and measurement uncertainty assessment in machine tool coordinate measurements - U. Mutilba (2) –
Contact: Unai.mutilba@tekniker.es

2029 Keynote Paper proposal

STC E
Recycling production waste through additive manufacturing - F. Zanger (2) –
Contact: frederik.zanger@kit.edu

Our CIRP Conferences

13th CIRP Conference on Photonic Technologies (LANE, Sep 2024, Germany)

Celebrating 30 years of LANE!

During September 15-19, 2024, the 13th CIRP Conference on Photonic Technologies (LANE 2024) took place in Fürth, Germany. The organizers were happy to welcome almost 350 participants from 22 different countries – one of them even declared that he had attended every LANE conference since 1994!

Conference aim and topics

Since the very beginning of the conference series in 1994, the focus of LANE has been on the exchange of up-to-date scientific results and developments on the application of lasers in research and production. This year, 204 talks, including top-class keynote and inspiring invited presentations, were given and discussed among the participants from science and industry.

The following topics were covered by the comprehensive and diversified program:

- Additive manufacturing
- Artificial intelligence (AI) & machine learning
- Fast beam manipulation & beam shaping

- Laser assisted processes
- Laser cutting & drilling
- Laser welding
- Laser processes for future mobility (Joint session with the AITeM LaserEMobility community)
- Laser safety
- Precision processing with short & ultrashort pulses
- Sensing & control
- Simulation & modelling
- Solidification cracks during laser beam welding
- Surface treatment

One highlight was for sure the plenary session with the keynote talks on the first conference day. The following renowned scientists gave interesting insights into their research:

- Stefan Kaierle, Laser Zentrum Hannover e.V. and Leibniz University Hannover, Germany. “How to facilitate 3D printing on the moon”.

- Yasuhiro Okamoto, Okayama University, Japan. “Recent laser applications in Japan and impact of beam intensity control and irradiation method”

- Mirko Sinico, KU Leuven, Belgium (winner of the “LANE 2022 Best Presentation Award”). “METAMOULD's quest: transforming mould fabrication through laser-based AM”

In the framework of the “Country Special”, which traditionally closes the conference, four experts from Singapore shared results of their work on advanced laser processes and technology.

More reasons to celebrate: Awards and winners
Besides LANE’s birthday, different award ceremonies gave reasons to celebrate:

During the plenary session on the first conference day, the ceremony for the Award of the German Scientific Society for Lasers and Photonics (WLT) took place. Prof. Jean-Pierre Bergmann declared Dr. Carolin Rothhardt from the Fraunhofer Institute for Applied Optics and Precision Engineering (IOF) and Dr. Ömer Üstündag from the

Federal Institute for Materials Research and Testing (BAM) as the winners of the “WLT Award 2024” in recognition of their contributions to the scientific development of laser technology and photonic technologies, and their extraordinarily successful assumption of financial, personnel, and strategic responsibility in German institutional research.

Furthermore, all participants had the chance to vote for their favorite oral presentation. The “LANE 2024 Best Presentation Award”, sponsored by the Förder- und Freundeskreis für den Ausbau der Lasertechnologie an der Friedrich-Alexander-Universität Erlangen-Nürnberg e.V. (FFL e. V.) was awarded during the closing plenary session. The winners are Laura Budde, Laser Zentrum Hannover e.V. (Germany) for her talk on "Investigation of laser wire bonding for the fabrication of tensegrity structures" and Lars Vanmunster, KU Leuven (Belgium) for his presentation on “Exploration of synchronized dual-beam laser melting with high-speed video imaging”. Michael Haas from the Institut für Strahlwerkzeuge (IFSW) of the University of Stuttgart (Germany) achieved the third place.

No LANE conference is complete without a new “Knight of Laser Technology”! Prof. David Bourell, who has been part of the “LANE family” since the beginning, was ennobled by Prof. Reinhart Poprawe during the Conference Banquet. Participants liked the extraordinary candle light dinner and the location very much. At “Ofenwerk” in Nuremberg automotive rarities offered a special setting for the ceremony.

The organizers would like to congratulate all winners on their success!

Various networking opportunities

Once more, the percentage of conference delegates attending the side events, which frame the conference’s lecture sessions, was high. This demonstrates that socializing becomes more and more important in the context of international scientific events. The “Photonics Casino Night” at the Casual Reception, as well as the “Night of the Knights” with candle light dinner, and the “Lab-Tour & Cocktail Session” enjoyed great popularity. Also, the conference’s early-morning sporting events received very positive

feedback. For sure, there will be “We Keep Lasers Running” jogging rounds and easy workout and stretching sessions at LANE 2026, again.

Equal opportunities in science

From the very beginning, equal opportunities in science has been of great importance for LANE. This year, workshops on reducing bias and inequalities in science and academic careers were offered and gave conference participants the chance to think outside the box and learn something beyond technical innovations. The workshops were conducted by Prof. Heather Hofmeister and Paul Sinzig (both from the University of Frankfurt, Germany).

They organizers thank all conference participants, speakers, sponsors, exhibitors, reviewers, chairs, colleagues, and supporters. The next LANE conference will take place in Fürth during September 6-10, 2026.

3rd CIRP Conference on Composite Material Parts Manufacturing (CCMPM, Sep 2024, Germany)

After a five-year break, the 3rd CIRP Conference on Composite Material Parts Manufacturing (CCMPM) was successfully held during 25-27 September 2025 in Braunschweig, Germany, one of Europe's most active research regions. The conference was co-organized by Prof. Dr.-Ing. Klaus Dröder and Dr.-Ing. André Hürkamp, both from the Institute of Machine Tools and Production Technology (IWF) at Technische Universität Braunschweig. A total of 65 participants from 11 countries took part in the conference. This international attendance underscores the global significance and impact of the conference and the field of composite material parts manufacturing and lightweight design.

The conference commenced with a Welcome Reception in the technical centre of IWF on the evening of Wednesday, 25 September. Participants had the opportunity to discuss research topics, view current demonstrators from ongoing research projects, and take a tour of IWF's research facilities. This provided attendees with a comprehensive overview of the latest advancements in production technology in the field of production engineering. The Welcome Reception fostered a research-focused atmosphere, allowing participants to engage in stimulating discussions on topics related to composite material parts manufacturing, function integration, and lightweight design.

The conference sessions, including keynote and technical paper presentations, took place at the Haus der Wissenschaft, located on the campus of TU Braunschweig. The event offered excellent opportunities for idea exchange within a high-level research

community, which will no doubt contribute to the advancement of cutting-edge research in composite materials manufacturing.

The program featured five keynote presentations from both industry and academia, emphasizing the relevance of research on composite materials in production and the role of digitalization in enabling sustainable solutions:

- Univ.-Prof. Dr.-Ing. habil. Prof. h. c. Dr. h. c. Prof. Lothar Kroll, TU Chemnitz – “Composite structures in series production”, 26 September.
- Dr.-Ing. Alexander Karl, POLYTEC PLASTICS Germany GmbH & Co KG – “The future of composite parts manufacturing”, 26 September.
- Prof. Dr. Martin Wiedemann, German Aerospace Center (DLR) – “System lightweight design for a sustainable aviation industry”, 27 September.
- Kai Steinbach, Leichtbau-Zentrum Sachsen GmbH – “Shift left: How reliable manufacturing processes help reduce development costs”, 27 September.
- Prof. Kevin Kerrigan, University of Sheffield – “Composite manufacturing: A digital revolution”, 27 September.

Following the keynote sessions, each paper presentation consisted of a 15-minute presentation, followed by discussions moderated by the session chairs. Especially the engaging discussions have to be emphasized, where the participants showed a keen interest in the research topics and took the opportunity to raise questions, share ideas, and exchange perspectives to deepen their understanding and further develop their research findings.

On the afternoon of Thursday, 26 September, participants attended a guided tour of the research centre Open Hybrid LabFactory (OHLF) located on the Wolfsburg Campus of TU Braunschweig. The tour offered an in-depth look at the industrial-scale modern research infrastructure, demonstrations of composite manufacturing, advanced processes, and ongoing innovative research projects.

Another highlight of the conference was the exclusive Conference Dinner, carried out after the lab tour at the historic Eintracht Stadion in Braunschweig. Participants were immersed in German football culture, learning about the history of the first football game in Germany. They also had the unique opportunity to step onto the stadium field, experiencing the atmosphere and setting of football champions. The dinner provided a relaxed and informal setting for

continued discussions, fostering meaningful connections and networking among the attendees.

Overall, the 3rd CIRP CCMPM successfully facilitated the exchange of knowledge, fostered collaboration, and showcased the latest research advancements in composite material parts manufacturing and lightweight design.

20th CIRP Conference on Modelling of Machining Operations (CMMO, May 2025, Belgium)

The 20th CIRP Conference on Modeling of Machining Operations, CIRP CMMO 2025, took place on 22-23 May 2025, with a welcoming event on 21 May in the evening, in Mons, Belgium. It was an in-person only event that gathered 190 participants from 19 countries in Europe, Asia, the Americas, and Africa, making it one of the most attended of the series. The 125 accepted papers have been published in Procedia CIRP and 121 papers were presented during the conference.

The papers available prior to the conference helped the audience and the sessions chairs to prepare the sessions and improve the quality of the discussions. Many young researchers attended and presented their research, sometimes for the first time at an international conference, to the prestigious CIRP community involved in modeling of machining operations. Representatives from industry were also present and introduced their latest research results, providing a complementary point of view to the contributions from academia. In addition to the presentations of scientific results, two keynote talks were delivered by leading researchers:

- Future trends in machining: the role of modelling by Dr. Pedro-José Arrazola from Mondragon Unibertsitatea, Spain.

- How industry and academy worked together to tackle the tool wear challenge by Ir. Tom Jacobs from Sirris, Belgium.

The presentations were grouped by “hot topics” ranging from well-established topics such as numerical, analytical, and empirical modeling, to more recent techniques or fields, such as use of artificial intelligence and digital twins, or sustainable machining. The papers were discussed in a total of 31 sessions divided into 11 hot topic session themes as follows:

- Numerical, analytical and empirical modeling (8x)
- Dynamics and stability of machining, and robotic machining (4x)
- Monitoring, diagnostics and optimization of machining processes (4x)

- Artificial intelligence and digital twins for machining (4x)
- Machining of non-metallic materials and non-conventional processes (3x)
- Sustainable machining (2x)
- Grinding, non-conventional and hybrid processes (2x)
- Multiphysics and multiscale modeling (1x)
- Surface conditioning and surface integrity of machined components (1x)
- Material behavior and tribological aspects in cutting (1x)
- Thermal effects and part distortion (1x)

A global analysis of the distribution of the papers among the hot topics shows there is still a very strong basis of established topics of CIRP CMMO (numerical, analytical and empirical modeling; dynamics and stability of machining). They are followed by more advanced or recent techniques (monitoring, diagnostics and optimization of machining processes; and artificial intelligence and digital twins for machining) with increasing importance by comparison to previous editions of the conference. Then, emerging topics are also identified, such as machining of non-metallic materials, sustainable machining, robotic machining, or hybrid processes, that are expected to have more importance in the next editions of the conference.

Each paper was given a 20-minute slot allowing its presentation for 15 minutes followed by 5 minutes of questions and discussions. 30 Session Chairs served for the 31 sessions, ensuring a high variety in the profiles and a close match between the topic of the session and their expertise. The technical support of the sessions was handled by the Organizing Committee to remove these aspects from the Session Chair's duties, enhancing the quality and smoothness of the technical discussions. The program was organized with five parallel sessions on the first day, and four parallel sessions on the second day.

This edition of CIRP CMMO marked the 20th occurrence of the series and showed its prominence as a strong and prestigious CIRP conference. The interest and relevance of the series has been confirmed by the increasing number of colleagues interested in hosting it. The venues for the 2027 and 2029 editions are now known, while there are currently four candidates being considered for 2031.

Future CIRP Meetings, Conferences and Sponsored Conferences

For the dates and locations of next **CIRP General Assemblies**
go to “EVENTS”→ Next CIRP General Assemblies

For the dates of next **CIRP Winter Meetings** in Paris
go to “EVENTS”→ Next CIRP Winter Meetings

For the most recent overview of our coming **CIRP Conferences**
go to “EVENTS”→ Next CIRP Conferences

For the most recent overview of our coming **CIRP Sponsored Conferences**
go to “EVENTS”→ Next CIRP Sponsored Conferences

You can find all CIRP Conferences and Sponsored Conferences **past events** through the link EVENTS → CIRP Past Events

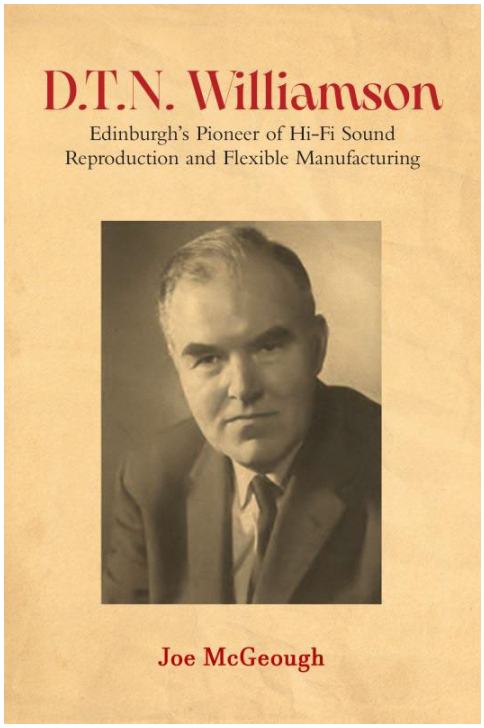
New books from our members

D.T.N. Williamson: Edinburgh's Pioneer of Hi-Fi Sound Reproduction and Flexible Manufacturing

Professor Joe McGeough FRSE, FREng, and Fellow Emeritus (CIRP) has published a biography of D.T.N. Williamson noted for his amplifier and SYSTEM24 manufacturing. The biography is based on his inaugural address as President of the Institution of Mechanical Engineers. The biography is published through Edinburgh Diamond Open Access, and can be downloaded from the below link:
[D.T.N. Williamson: Edinburgh's Pioneer of Hi-Fi Sound Reproduction and Flexible Manufacturing | Edinburgh Diamond | Books]

Author: Joe McGeough

Synopsis



D.T.N. Williamson was one of the most creative engineers of the second part of the 20th Century. Yet his early life was full of life-threatening illness, failure, and rejection. He overcame all these setbacks. In his 20s, he designed an amplifier that enabled high-fidelity sound to be obtained from gramophones in vogue at that time, of a quality that was far higher than had ever previously been achieved. He devised a "lightweight" pickup for the gramophone needle. Then, he pioneered the use of computers for machining, enabling components to be made to precision, far higher than was available from conventional methods. In parallel, he developed a novel measurement system that was needed for such components.

On those foundations, he went on to develop an entirely computer-controlled process for batch manufacture, that became known as "SYSTEM 24".

The Science Research Council appointed Williamson Chairman of its Manufacturing Technology Committee. He fostered the establishment of the "Teaching Company Scheme", one of the most successful examples of UK industry-university cooperation. He promoted "Grinding Technology" and "Die and Mold" research programs in which academics in UK universities worked with industrial partners to overcome problems faced by manufacturing industry.

Those achievements were recognized by Williamson being elected a Fellow of the Royal Society; and both Heriot-Watt and Edinburgh Universities awarded him honorary degrees of Doctor of Science. This book portrays the fascinating life and work of D.T.N. Williamson.

From the CIRP Office

Violaine Baudin

CIRP Annals' submissions & publications process, CIRP meetings, guests, CIRP website, candidatures for membership, Internal Regulations and any other internal matters.

Agnès Chelet

Financial aspects: accountancy, membership fees, conferences sponsorships' fees & reports, Winter meetings' registrations. Agendas & minutes of the scientific meetings.

Latest News

- CIRP Annals 2025: The Papers and Keynote Papers (Vols. 1 and 2) are online on the CIRP Website. You will find the order of presentation of the papers on the page of the Stockholm GA
- You will be able to download the 2025 CIRP Annals per complete Volume in pdf from next August onwards (from your private Dashboard).
- All information for attending the upcoming General Assembly in Stockholm is available online on our website.