



The International Academy for Production Engineering

NEWSLETTER

N° 65 – June 2023

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From the President

Dear CIRP friends,

Time flies... The CIRP Winter Meetings just passed and we are already looking forward to seeing each other at the General Assembly within two months.

The CIRP Winter Meetings were well attended, and everyone enjoyed being in Paris once again to have active discussions in the various STCs and working groups. Even more, besides the regular scientific and technical discussions, there was time to talk, chat, and discuss new initiatives for co-operation. We all agree that having physical CIRP gatherings in the form of winter meetings and general assemblies establishes the 'family' character of CIRP. But let us also not forget the many CIRP conferences where dedicated topics are presented and discussed among the members, as well as many other (young) researchers from academia and industry. I'm happy that this newsletter once again includes reports about these conferences.



The 72nd General Assembly will be held in Dublin from August 20 to 26. Dublin is the capital of Ireland, a country with world-class manufacturing in various domains. The organizing committee is working hard to offer us a productive and memorable stay. We are looking forward to being there and discussing research topics together, and with local experts, and for sure tasting the local culture.

Like many other countries, Ireland is facing the so called "war for talent", where it is difficult to find technological (manufacturing) experts. During my visit to Dublin in November 2022, where I discussed with the local organizing committee the preparation of the General Assembly, it was proposed to have presentations and discussions on how Ireland is facing the challenge of recruiting more people interested in manufacturing, including attracting more females into the domain. Having already hosted initial discussions on the topic of women in manufacturing at the General Assembly in Bilbao, the CIRP Council agreed during the last Winter Meetings to set up a focused group comprised of fellow, associate, and corporate members, and research affiliates, dealing with the topics of "Diversity, Equity, and Inclusion" within CIRP. This group, together with the local organizing committee, is now undertaking the efforts to facilitate presentations and discussions during the General Assembly.

As always, the newsletter includes news from members, news from various committees, CIRP conferences, etc. In addition, information about the new collaborative working group on "Manufacturing for Sustainability" is featured. A CIRP vision for Manufacturing for Sustainability was already developed, but in order to further

understand and implement that vision, a new collaborative working group on this topic has been proposed by the cross STC and approved by Council.

I wish you all an enjoyable read of the 65th CIRP Newsletter, and hope to meet you in person during the upcoming General Assembly in Dublin.

With my best regards,

Bert Lauwers
President of CIRP 2022-2023

From the Editor

Dear CIRP colleagues,



Once again, it is an honor to connect with you via the CIRP Newsletter. It was a treat to see so many friends and colleagues in person during the 2023 CIRP Winter Meeting in Paris. We now look forward to our next gathering for scientific discussions and exchange of ideas at the upcoming 2023 General Assembly in Dublin.

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

News from Members

Professor Prof. Jean-Pierre Kruth inducted in the TCT “Hall of Fame” for Additive Manufacturing

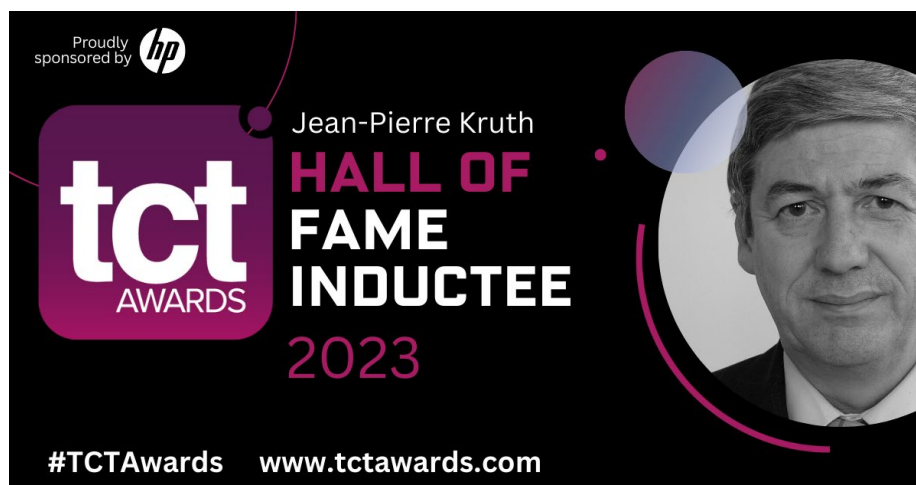
On June 7 2023, CIRP Fellow Jean-Pierre Kruth was inducted in the TCT “Hall of Fame” during a gala evening organized in the frame of the TCT-3Sixty conference and fair in Birmingham, UK. A short video on Prof. Kruth’s induction ceremony can be viewed from: [2023 TCT Hall Of Fame Inductee - Jean-Pierre Kruth](https://youtu.be/OqHNuUAmZ-4) or <https://youtu.be/OqHNuUAmZ-4>.

The TCT Hall of Fame celebrates those members of the additive manufacturing community who have made a positive, significant, and long-term impact on the industry.

Notice that J.-P. Kruth is not the first CIRP colleague to join this Hall of Fame. Among the twelve earlier inductees are CIRP Fellow Prof. Gideon Levy and Mr. Chuck Hull, inventor of the first commercial AM process (the stereolithography process), founder of the company 3D Systems and 2014 recipient of the CIRP General Nicolau Award.



Prof. J.-P. Kruth (middle) at the TCT “Hall of Fame” gala.



Professor Hoda ElMaraghy Invested into the Order of Canada

At a Ceremony in Rideau Hall in Ottawa on 14 December 2022, Professor Dr. Hoda ElMaraghy was invested into the Order of Canada by her Excellency the Right Honourable Mary Simon, Governor General of Canada. In this photo, they are shown wearing the official insignia for the Order of Canada, Canada's highest civilian honor.



The official announcement of this prestigious award was made in 2020, before the pandemic.

Photo by Sgt Mathieu St-Amour, Rideau Hall © OSGG, 2022

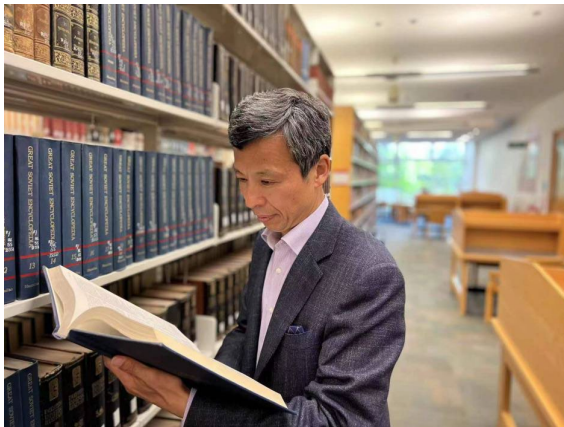
The Order of Canada is the cornerstone of the Canadian honors system. Established in 1967 by the late Queen Elizabeth II, it recognizes the outstanding merit and distinguished contributions of Canadians who make a significant difference to Canada through lifelong contributions in every field of endeavor in the Canadian society. Only two women engineers were invested during the ceremony, where 50 Canadians received their insignia.

Her citation read, "Hoda ElMaraghy is a preeminent manufacturing systems researcher. Distinguished University Professor of Industrial Engineering at the University of Windsor and founding director of its Intelligent Manufacturing Systems Center, she has made innovative contributions to advance the intelligence, adaptability, and responsiveness of manufacturing systems in Canada and abroad. A pioneer in her field, she was the first woman in Canada to obtain a Ph.D. in mechanical engineering and the first woman to serve as dean of engineering in Canada".

Professor Hoda ElMaraghy is the first woman elected Fellow of the International Academy for Production Engineering (CIRP). She is author and co-author of numerous CIRP papers, including nine highly cited CIRP Keynotes and has over 500 publications. She received Honorary Doctorates from Chalmers Technical University in Sweden and Aalborg University in Denmark. In 2015, she was inducted into the Order of Ontario.

Professor Fengzhou Fang Elected as Member of the Royal Irish Academy

Professor Fengzhou Fang, Vice President of CIRP, has been elected as a Member of the Royal Irish Academy in recognition of his academic achievements in manufacturing science and education. He developed the theory of the Three Paradigms of Manufacturing Advancement, which identified atomic and close-to-atomic scale manufacturing as the fundamental technology of the new manufacturing paradigm, Manufacturing III. His contributions to micro/nano manufacturing and ultra-precision machining technologies, especially on the fundamentals of nanometric cutting, are widely adopted and referenced in new manufacturing processes.



Membership in the Royal Irish Academy the Academy is the highest academic honor in Ireland. The conferring ceremony for newly elected members was held on May 26th, 2023.

Professor Fang's research interests include optical freeform surface design and manufacturing, ultra-precision machining and measurement, atomic and close-to-atomic scale manufacturing. He has been elected Fellow of the International Academy of Engineering and Technology (AET), the International Society for Nanomanufacturing (ISNM), the Society of Manufacturing Engineers (SME), and CIRP. Professor Fang is also the President of AET and the Editor-in-Chief of Nanomanufacturing and Metrology.

Professor John W. Sutherland Elected to Membership in the National Academy of Engineering

John W. Sutherland has been elected to the U.S. National Academy of Engineering “for pioneering research contributions to environmental sustainability in manufacturing and their implementation in industry.” Sutherland is professor and Fehsenfeld Family Head of Environmental and Ecological Engineering at Purdue University.



Prof. John W. Sutherland

Beginning in the early 1990s, Sutherland helped pioneer the establishment of the field of sustainable manufacturing, which seeks to maximize the effective use of resources while minimizing environmental impacts. Since then, he has helped to make the environment a well-recognized consideration in the design of products and manufacturing processes and systems. This has enabled leading manufacturers to produce less waste and consume less energy and resources, all while being more economically competitive. He has also made substantial contributions to engineering education through classroom instruction and graduate student mentoring. He has published a multitude of technical papers and co-authored the textbook: Statistical Quality Design and Control: Contemporary Concepts and Methods.

Election to National Academy of Engineering membership is one of the highest professional honors accorded to an engineer. Members have distinguished themselves in business or academic management, in technical positions, as university faculty, or as leaders in government or private engineering organizations.

Professor Yuebin Guo Receives the SME 2022 Albert M. Sargent Progress Award



Prof. Yuebin Guo

Dr. Yuebin Guo, Henry Rutgers Professor of Advanced Manufacturing and Leader of New Jersey Advanced Manufacturing Initiative at Rutgers University-New Brunswick, has been recognized by the Society of Manufacturing Engineers (SME) Albert M. Sargent Progress Award for his seminal contributions to the development, understanding, and control of process–surface integrity–functionality relationships in a broad range of manufacturing processes and data-enabled adaptive manufacturing systems. The Albert M. Sargent Progress Award is an SME International Honor Award and recognizes significant accomplishments in the field of manufacturing processes, methods, or systems.

Professor Guo has been leading the Rutgers AI manufacturing initiatives including 5G-enabled ultra-low latency manufacturing, digital twin of manufacturing processes, physics-informed learning of manufacturing dynamics, materials informatics, surface integrity, and functionality by integrating emerging data science into production operations. As an ASME Swanson fellow, Prof. Guo previously served as the Assistant Director for Research Partnerships at the U.S. Advanced Manufacturing National Program Office (AMNPO). Prior to AMNPO, he was a professor of mechanical engineering and served as the director of the Consortium for Surface Integrity and Functionality at the University of Alabama. He was also a Humboldt Research Fellow in WZL at RWTH Aachen, Germany. He is a fellow of CIRP, ASME, and SME and an associate editor and guest editor for several leading manufacturing journals.

<https://www.sme.org/aboutsme/newsroom/press-releases/2022/sme-selects-manufacturing-leaders-for-2022-international-honor-awards/>

Professor Waguih ElMaraghy Receives Government of Ontario - Canada 2022 Award for 30 years of Professional Engineering Service



Photo by Naomi Pelkey, University of Windsor, 2023.

Professor Waguih ElMaraghy has received a 2022 Ontario Volunteer Service Award, nominated by Professional Engineers Ontario (PEO) for his 30 years of service to the organization. The Award Certificate signed by H.E. The Honourable Doug Ford, Premier of Ontario, came with a 30-Year V-lapel pin and the Platinum Jubilee lapel pin of Her Majesty Queen Elizabeth II. The award recognizes Dr. ElMaraghy's continued contributions to engineering and engineering education. He is the Chair of the PEO Academic Requirements Committee. The Ontario government, Volunteer Service Award, is for "honouring the exceptional contributions of individuals providing dedicated service to a single organization." Dr. ElMaraghy received the PEO 2020 Order of Honour: "In recognition of (his) contribution to the engineering profession."

University of Windsor Dean of Engineering Bill Van Heyst, said: "Waguih has had an incredibly fruitful career which has been dedicated to his profession, his students, and our faculty; his legacy of volunteering can be seen through his work with the PEO where he has promoted to his utmost the high professional values associated with our sector."

Professor Waguih ElMaraghy has been a Fellow of the International Academy for Production Engineering (CIRP) since 2004 and has over two hundred publications, including highly cited CIRP keynotes. He is also a Fellow of the Society of Manufacturing Engineers (SME), the Canadian Academy of Engineering (CAE), Engineers Canada (EC), the Canadian Society for Mechanical Engineering (CSME), and the American Society of Mechanical Engineers (ASME). In 2018, at the ASME Design Theory and Methodology (DTM) 30th anniversary, he was honored as one of the DTM founders.

Professor Jian Cao Elected to the American Academy of Arts and Sciences

Prof. Jian Cao of Northwestern University has been elected a member of the American Academy of Arts and Sciences (AAA&S), one of the nation's oldest and most prestigious honorary societies. It was founded in 1780 by John Adams, James Bowdoin, and others who believed the new republic should honor exceptionally accomplished individuals and engage them in advancing the public good.

The first members elected to the Academy in 1781 included Benjamin Franklin and George Washington. Academy members include more than 250 Nobel laureates. The nearly 270 members elected in 2023 are drawn from academia, the arts, industry, policy, research, and science, and include more than 40 International Honorary Members (IHM) from 23 countries. Professor Cao is among the 11 members elected to Section 5 "Engineering and Technology".

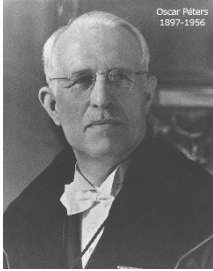


Prof. Jian Cao

Professor Cao is the Cardiss Collins Professor of Mechanical Engineering and the director of the Northwestern Initiative for Manufacturing Science and Innovation. She became a Fellow of CIRP in 2014 and was an officer of STC-F (2011 – 2019) and of Additive Manufacturing CWG (2018 – 2020). She is currently serving on the Editorial Board of CIRP Annals. Prof. Cao's major research interests include innovative manufacturing processes and systems, particularly in the areas of deformation-based processes and laser additive processes. She has published papers in STC-E, F, M and S among her over 250 journal articles, and her contributions are recognized with an h-index exceeding 70 on Google Scholar.

Prior to her election to AAA&S, Prof. Cao was elected to the National Academy of Engineering (NAE). Her major awards include the ASME Milton Shaw Manufacturing Research Medal, the SME Gold Medal, the DoD Vannevar Bush Faculty Fellowship, the ASME and Pi Tau Sigma Charles Russ Richards Memorial Award, the SME Frederick W. Taylor Research Medal, the ASME Blackall Machine Tool and Gage Award (twice), and the ASME Ted Belytschko Applied Mechanics Award. She will be officially inducted to the American Academy of Arts and Sciences on September 30.

O&J Péters Prize



Oscar & Jacques Péters Prizes 2022 granted to Prof. Michael Schmidt and Prof. Gandjar Kiswanto



For our younger CIRP colleagues, let us first recall that Prof. Oscar Péters, from KU Leuven, Belgium, was one of the founders of CIRP in 1951 and its second president (1954-1955). His son, Prof. Jacques Péters, was also an eminent CIRP member, being president in 1972-1973. Prof. J. Péters passed away in 2018 and bequeathed an important legacy to the O&J Péters Fund, allowing it to upgrade the existing O&J Péters Prize by splitting it in two truly international triennial prizes: The International O&J Péters Prize (50.000 €) for excellent scientific and/or technological contributions in the field of production engineering, and the O&J Péters Grant for Development Cooperation (up to 30.000 €). Those new Prizes were awarded for the first time in 2022. The next Prizes will be awarded in 2025. More information can be found at <https://www.mech.kuleuven.be/o-j-peters-fund>.

The International O&J Péters Prize 2022 was granted in October to our CIRP colleague Prof. Dr.-Ing. Michael Schmidt from the Friedrich-Alexander-University, Erlangen-Nürnberg, Germany, in recognition of his 'Outstanding pioneering research in the field of photonics, optics and laser technology for production engineering'.

The O&J Péters Grant for Development Cooperation 2022 was granted, on September 21 during the World Conference on Micro and Nano Manufacturing (WCMNM) in Leuven, to Prof. Dr. Ir. Gandjar Kiswanto, Universitas Indonesia, Jakarta, to support the project 'Acoustic Emission for Crack Inspection in the Micro-Forming Process of Biodegradable Magnesium Implants'.



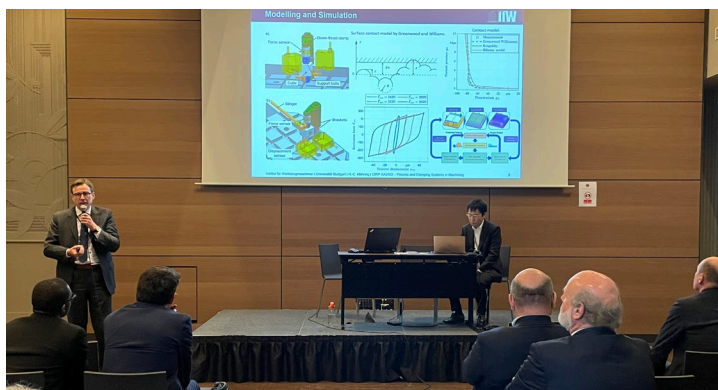
Prof. M. Schmidt at the Flanders Make Symposium.



Prof. G. Kiswanto at the WCMNM conference.

CIRP Winter Meetings 2023

The Winter Meetings of CIRP took place, once again, in-person after 2 years of on-line format during February 2023 at "La Mutualité" meeting center in Paris. The event was attended by 214 academic members, 58 corporate members, 31 RAs, and 56 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 Prof. S. Kara, EC Chair)



Editorial Committee (EC) meeting was held in Paris first time since 2020 after the COVID lockdowns. It was a real pleasure to work again with colleagues in the EC in person. Each paper was reviewed by four reviewers, two from the EC members and two from STC officers. As part of the new process, several CIRP colleagues were also invited to review papers where it was necessary due to the specific nature of some papers and the expertise required. The review process was highly efficient, and all reviews were completed in a timely manner.

The Editorial Committee has had only few changes in the last year. Our colleagues, Professors Jan Aurich, Steve Newman and Ismail Lazoglu have joined the EC to replace Professors Julian Allwood, Joost Duflou, and Rajkumar Roy. Once more I would like to sincerely thank outgoing EC colleagues for their service and collegiality during the difficult COVID times and welcome new colleagues to the EC. I look forward to working with them, together with the rest of the EC committee to serve the CIRP.

As the Chair of the Editorial Committee, I would like to thank the members of the Editorial Committee the STC officers as well as other CIRP colleagues for completing their reviews in a timely manner and for their support.

The 2023 EC review process

In 2023, 246 regular paper submissions (10 more than 2022) have been received. 22 papers were cooperative work papers and 31 submissions have been sponsored. Including the 12 Keynotes, 540 (Vol. 1 equivalent) reviews have been performed by the Editorial Committee. In addition, each STC-Chair and Vice-Chair reviewed all the



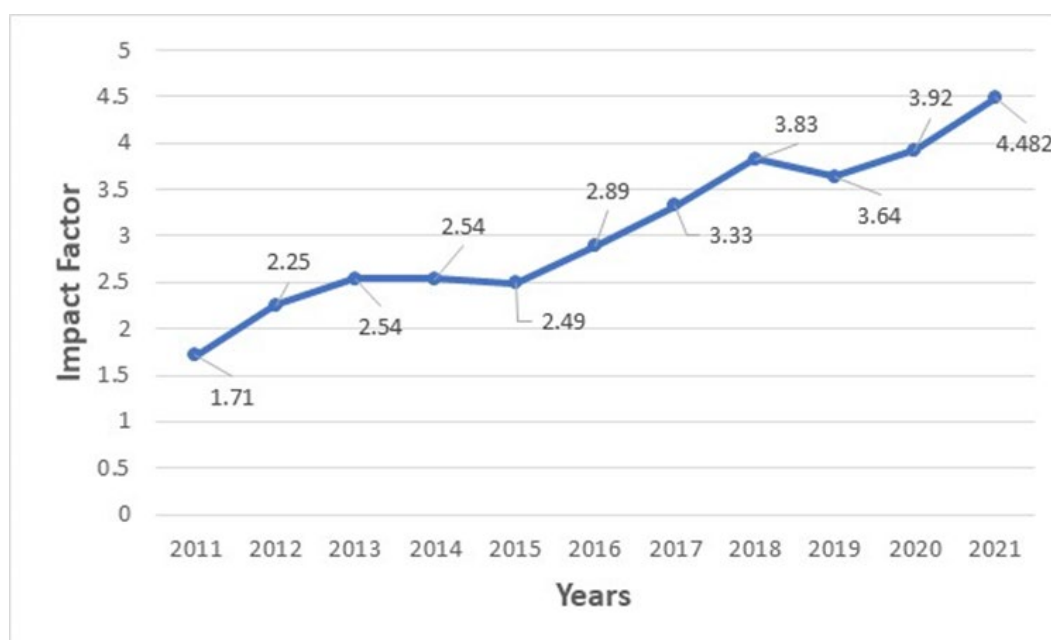
Visit by the CIRP President Prof. Lauwers to the Editorial Committee during the reviews of the 2023 CIRP Annals.

paper submissions independently in their own STC. Hence, every paper submission received at least 4 independent peer reviews. Each paper was individually screened for original content using iThenticate software and as applicable, through literature surveys relevant to the proposed paper. The iThenticate scores ranged from 2% to 56%. Again, most of the papers with an iThenticate score above 25% were carefully checked, and above 30% have been rejected due to unacceptable similarity with existing publications. Also, papers which presented only marginal contribution beyond earlier published work were rejected.

In all, 52% of the submitted papers have been accepted; the acceptance rates over the STC varied between 36% to 78.6%. As in the past, the papers have been judged purely on quality, not on the available presentation slots.

STC	Submitted Papers	Provisionally Accepted Papers	Acceptance Rate	Transfers
A	25	9	36.0%	N/A
C	20	14	70.0%	N/A
Dn	22	8	36.4%	N/A
E	41	22	53.7%	N/A
F	23	12	52.2%	N/A
G	22	9	40.9%	N/A
M	28	22	78.6%	N/A
O	33	15	54.5%	N/A
P	15	7	53.3%	N/A
S	17	10	41.2%	N/A
TOTAL	246	128	52% (46.6% in 2022)	

The impact factor has continued to increase from 3.92 in 2020-2021 to 4.482 in 2021-2022. Based on an estimation of Elsevier we may expect further increase of the impact factor in 2022-2023.



As mentioned in the previous EC report, a new task force has been set up to develop and propose new measures in consultation with the CIRP community to improve the quality of papers and the review system further.

English language quality in CIRP Annals submissions

EC does acknowledge that CIRP is an international society, hence different writing styles are to be expected. However, while reviewing the CIRP Annals papers for 2023 (Vol. 1 and Vol. 2), it was noted that some papers had poor English at the initial submission stage which made the comprehension of technical content difficult and time consuming. For such papers, which still had strong technical content, the EC members did their best to correct the English mistakes and to recommend writing style improvements. However, the handling of such papers brings a disproportionate extra workload compared to examining manuscripts written with proper English. In some cases, the authors were also encouraged to revise their submission with the help of a professional technical writer, which they did, and these efforts led to significant improvements in the quality of the papers. The earnest efforts of the reviewers and authors are appreciated in this regard.

We kindly remind the authors that the Editorial Committee reserves the right to reject submissions with poor written English. Furthermore, in the case of Annals Vol. 1, the tight timelines for the review, revision, and second review compels the acceptance decisions to favor, more frequently, the manuscripts that require minor changes in the technical content and/or writing style, in contrast to those needing major rework. Therefore, we kindly remind authors to ensure the quality control of their papers ahead of time, including the technical content and English presentation, before the original submission to the CIRP Annals.

If authors making a submission to the CIRP Annals do not feel their manuscript demonstrates the English language standard required, they are encouraged to obtain assistance from a professional technical writer in proof-reading and editing their article before submitting it to the CIRP Annals.

From the CIRP Journal of Manufacturing Science and Technology

(by Prof. Yusuf Altintas, Editor-in-Chief)

Dear CIRP Community:

Our journal was established by CIRP in 2007 to expand the dissemination of CIRP Members' research to a wider audience. Prof. L. Monostori was the founding editor-in-chief and served until 2019. Prof. B. Karpuschewski served from 2019 to 2022, and I started to serve as of September 2022. CIRP JMST was included in Science Citation Index in 2018. I now appreciate how tremendous a task both past editors did, and I thank them for leaving a well-working mechanism behind.



In consultation with the CIRP Communication Committee, Board, and Council, we reorganized the journal to further improve its impact on the manufacturing community. A new Editorial Review Board has been formed whose members are selected from CIRP fellows, associates, and research affiliates who actively publish and review articles for the journal. We recognize their contributions and can report their contributions to CIRP, if asked. The editor and associate editors contribute to the journal as volunteers. We expanded the number of associate editors to cover all CIRP STC disciplines proportional to the number of papers we receive in each field. The chief editor has the power of desk rejecting poor or unrelated papers. If the editor is unsure about the content, the expert associate editor can desk reject the papers as well. This mechanism helps to avoid overloading our volunteer reviewers who are mostly CIRP members. It is essential to have a strong and credible review system to keep the standard of CIRP JMST at the highest level. The Editorial Board thanks all reviewers who contribute to the advancement of CIRP JMST.

We, as a team of dedicated editors, have done our best to handle this increasing workload. Currently, the team consists of 24 Associate Editors as follows:

Associate Editors

STC-A:	Michael Hauschild, Sami Kara, Lihui Wang
STC-C:	Pedro-José Arrazola, Rachid M'Saoubi, Paul T. Mativenga
STC Dn:	Eric Lutters, Tetsuo Tomiyama
STC-E:	Paulo Bártolo, Livan Fratini, Ajay P. Malshe, Michael Schmidt, Wessel W. Wits
STC-F:	Markus Bambach, Stefania Bruschi, Marion Merklein
STC-G:	Jan Christian Aurich, Konrad Wegener
STC-M:	Erhan Budak, Atsushi Matsubara
STC-O:	Tullio Tolio, József Váncza
STC-P:	Han Haitjema, Enrico Savio

We received 698 papers between Sept 1, 2022 and May 30, 2023, and an average of 87 papers per month. 361 papers were rejected by the editors without review (51.7%) by citing poor quality, insufficient impact, or out-of-scope. 266 papers were rejected after one round of reviews (38.1%). 107 were sent back to authors with major revisions, and 12 required minor revisions. The present rejection rate is 89.83%. The average review period is 9 weeks.

We blocked all review papers unless they originated from CIRP Collaborative Working Groups, or were prepared by world-class experts in the field with the approval of editors. This policy was important to keep the reputation of CIRP as the body with the highest academic expertise in manufacturing subjects. The papers which are not related to CIRP STC disciplines are not considered by the journal. The journal currently has a cite score of 5.9 with an impact factor of 3.56. We strongly encourage CIRP members to submit their articles to our journal. Since our CIRP colleagues' papers always have high standards, they are handled diligently with care. We also encourage our colleagues to accept review invitations from our associate editors as part of being a CIRP community.

On behalf of CIRP and CIRP JMST Associate Editors, I thank all authors and reviewers for their contributions to our academy's journal.

Yusuf Altintas, Editor-in-Chief,
CIRP Journal of Manufacturing Science and Technology

From the CMAG Group



Dr. Yavuz Murtezaoglu
Chair



Dr. Luis Uriarte
Vice-Chair



Dr. Youichi Nonaka
Secretary

The Corporate Members Advisory Group (CMAG) meeting took place on February 23rd in Paris, during the CIRP Winter Meetings. At the start of the meeting, CIRP President Bert Lauwers emphasized the importance of CMAG within the academy, and encouraged CMAG members to continue building networks with CIRP's STCs. He also invited CMAG members to contribute through Industrial Technical Papers (ITPs), and emphasized his support for the sustainability-themed presentations and discussions, which comprised an important focus of the CMAG meeting.

Our CMAG meeting featured four presentations:

1. Introduction of the proposed new Collaborative Working Group (CWG): Manufacturing for Sustainability, by Professor Sami Kara (UNSW) and Professor Michael Hauschild (DTU).

Prof. Kara gave a presentation on decarbonization and carbon neutrality. He stated that the shift from a consumption-oriented economy to a sustainable economy is an urgent issue to maintain the global ecosystem and society. Prof. Hauschild presented the new CWG proposal, Manufacturing for Sustainability. He emphasized the importance of considering sustainability from the viewpoint of global ecosystem requirements, social requirements, and industrial engineering requirements. He stated that the CWG's mission will be to consider these vast and diverse issues with the combined efforts of all STCs.

2. Productivity and Resource Efficiency - The Potential of Digitization, by Dr. Jens Kummetz (Dr. Johannes Heidenhain GmbH)

Dr. Kummetz gave a presentation on the latest status monitoring and anomaly detection functionalities for improving productivity and energy efficiency in CNC machine tools. He demonstrated that more efficient measures can be implemented by digitalization, not only with conventional CNC control and PLC control, but also with status monitoring from IoT sensors and a 3D-model of the work centers and materials.



3. Implications of Circular Economy and actions taken by some Japanese companies, by Professor Yasushi Umeda (University of Tokyo)

Prof. Umeda gave a presentation on the history of discussions in Europe, the current state of discussions, the state of social implementation, and future issues regarding the Circular Economy (CE). He argued that eco-design and life-cycle design on a social scale are important. He presented the current situation of Japanese companies' efforts toward a CE. He also introduced the concept of "Circulation Provider", which would be analogous to an 'orchestra director' for the CE, as an emerging type of company specifically for this purpose.



4. Advancing mobility through innovative and digital rail systems, by Dr. Pinar Bilge (Stadler Rail)

Dr. Bilge presented the latest status of, and future challenges for, digital solutions in the rail transportation industry. She introduced the challenges of retrofitting for upgrading older fleets and increasing resource efficiency. For these cases, she argued that digitalization can be a core value driver towards lower maintenance costs, asset intelligence, as well as in boosting quality and reliability. She introduced a digital twin construction initiative in the rail transportation business and provided some examples, such as a battery-electric multiple units.

The presentations received enthusiastic comments and questions from the attendees, composed of corporate and academic members of CIRP. After the presentations, the CMAG Chair Dr. Murtezaoglu introduced the recent CMAG members who joined between 2020 and 2022.

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



Manufacturing for Sustainability



Prof. Michael Hauschild
Chair



Prof. Sami Kara
Vice-Chair



Prof. Sebastian Thiede
Secretary

The global society faces an existential threat if it fails to meet current and future material needs of its populations, while staying within the carrying capacity of our planet. Manufacturing plays a central role in meeting our needs and enabling decent lives for the global population, but our production and consumption also drive the environmental damage that we see manifest in the accelerating climate and biodiversity crises. There exist biophysical limits that our impacts on the environment must respect. For impact on the climate, the Paris agreement that has been adopted by many nations stipulates that we must strive to keep the global average temperature increase of the atmosphere at a level that allows us to avoid accelerating climate change. This translates into a cap on amount of greenhouse gas emissions that we can allow our activities to cause. There are also biophysical limits for our use of land or water, or our pollution of the ecosystems with chemicals. The exceedance of the tolerance of natural systems is reflected in the biodiversity crisis with a global rate of species extinction tens to hundreds of times higher than it has been over the past 10 million years.

CIRP has developed a vision for [Manufacturing for Sustainability](#) where sustainability is defined as: meeting the needs of present and future generations while staying within the planet's biophysical limits. The biophysical limits should be respected as absolute constraints, and while trade-offs between environmental, social, and economic objectives will occur, we must ensure that our activities do not impact the environment beyond critical limits and stay within the operating space that is defined by these limits.

The newly formed CWG on Manufacturing for Sustainability has the mission to strengthen understanding and implementation of the CIRP definition of sustainability across all STCs of CIRP in terms of applying a full life cycle perspective on technology and considering all relevant environmental impacts that it may have. It is intended to be an on-going platform for presentation and discussion of relevant research ideas, results, and concepts on manufacturing for sustainability to facilitate the development of a common understanding across all STCs within CIRP of how manufacturing can contribute to sustainability and to promote the society's role and contribution within the field.

It is the ambition of the CWG to develop:

- A roadmap for CIRP's development into an organization for manufacturing for sustainability.
- A roadmap for CMAG members' implementation of an absolute sustainability perspective in their activities including decarbonization towards net zero.

The CWG will have a strong focus on the implementation of sustainability in manufacturing industry.

Michael Hauschild, Sami Kara, Sebastian Thiede

From the Research Affiliates

Message from the RA Steering Committee



Dr. Till Clausmeyer
Chair



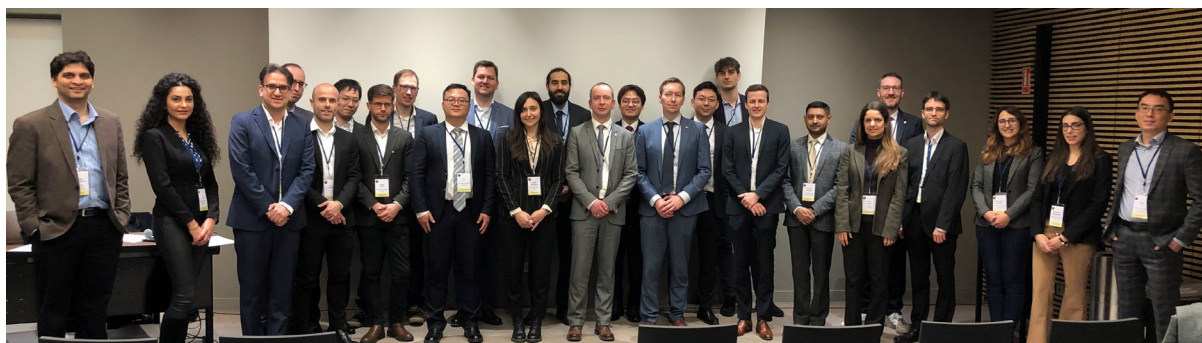
Dr. Amir Malakizadi
Vice-Chair



Prof. François Ducobu
Secretary

Dear Research Affiliates, dear CIRP Colleagues,

It was great to be able to meet and interact with colleagues and friends again in person at the CIRP Winter Meeting in Paris. The RA (Research Affiliate) meeting was held on site with 26 attendees. The meeting started with the introduction of new RAs and the RA board reports, followed by reports on the CIRP RA workshops, CIRPe conferences, and RA collaborating working groups.



2023 RA Winter Meeting in Paris, conducted in person.

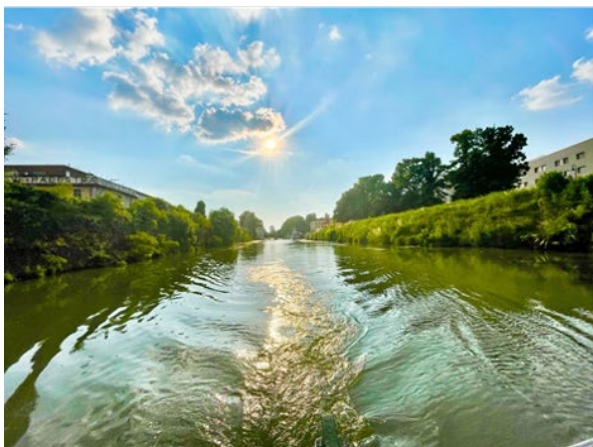
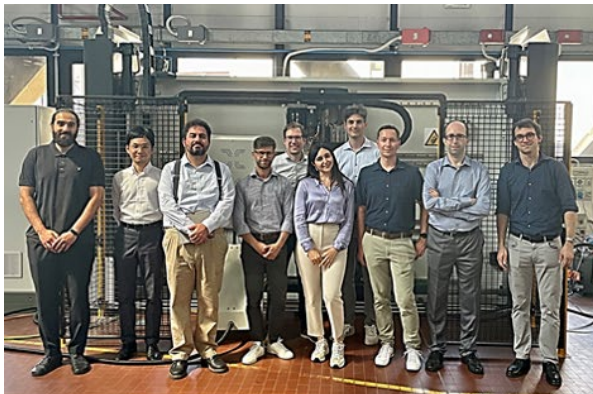
The RAs approved the next RA workshop to be hosted by Kyoto University in Japan. The 2024 workshop will be held in July and will be organized by Dr. Kotaro Mori. The RA workshop is one of the important activities of the RA community for networking, developing collaborations, and initiating cooperative work and common publications.

The RA Steering Committee.

15th CIRP RA Workshop 2023

During the two-day workshop in Padua (Italy), June 8-9, 2023, the RAs participated in various activities organized by Rachele Bertolini, Enrico Simonetto, and Filippo Zanini from the University of Padua. The event was sponsored by Fellow members of the University of Padua, including Profs. Stefania Bruschi, Simone Carmignato, Andrea Ghiotti, and Enrico Savio. The event began with a welcome address by Prof. Bruschi, who emphasized the importance of such opportunities for developing new research projects and fostering new and significant collaborations among the young researchers of the CIRP RA community.

Afterwards, the participants visited the Manufacturing Technology Laboratory, where they were introduced to some interesting research topics of the working groups. The afternoon continued with a discussion session, opened by a presentation from Prof. Massimo Barolo on engineering education topics. The discussion focused on the new challenges facing the teaching of technical subjects in light of the new tools and teaching methods made possible by the digital technologies that have been used more widely since the pandemic. The evening continued with a boat aperitivo along the navigable canals that connect Padua to Venice, followed by a dinner featuring traditional Venetian cuisine.



CIRP RA Workshop 2023 in Padua, Italy

The second day took place at the TE.SI Laboratory in Rovigo, focusing on sustainability. Prof. Enrico Savio introduced the topic by outlining the challenges, especially for production engineering, which the RAs will have to address in the coming

years. Prof. Giovanni Lucchetta (CEO of Smart Mold, a university spin-off engaged in research on innovative industrial solutions for plastic injection molding) presented several industrial cases, issues, and solutions related to the use of recycled thermoplastic materials in automotive production. The talks were followed by discussions and exchange among the RAs regarding the aspects of sustainability that directly impact their research topics and how they approach the issue. After taking a look at the labs, ongoing research activities were presented, followed by a discussion on potential future collaborations among the RA community members.

Save the date for the 16th CIRP RA Workshop 2024

The next CIRP RA Workshop will be held in Kyoto, Japan. It is currently scheduled for the first week of July (date to be confirmed soon). This will be the first RA workshop to be held outside of Europe. The event duration will be extended to a 3-day meeting, to take into account the travel time of most participants. The local organizer is Dr. Kotaro Mori (Kyoto University) supported by Prof. Atsushi Matsubara (Kyoto University).

11th CIRPe Global Web Conference 2023

The 11th CIRPe Global Web Conference is organized by Dr. Salil Bapat (Purdue University) and Dr. Jaydeep Karandikar (Oak Ridge National Laboratory). It will be held on October 24-26, 2023. The event will be streamed online for participants around the world. Prof. Ajay Malshe (Purdue University) and Prof. Scott Smith (Oak Ridge National Laboratory) are the supporting CIRP Fellows.

The theme of the conference is “Emerging trends in manufacturing: Strategies, processes, and applications.” Contributions include, but are not limited to: 1) Hybrid manufacturing, 2) Digital manufacturing, 3) Biologicalization and biomanufacturing, 4) Continued learning from the COVID-19 pandemic, and 5) Engineering education and workforce development. For current information and the program (after completion of the review processes), visit the website: <https://engineering.purdue.edu/CIRPe2023>.

12th CIRPe Global Web Conference 2024

During the 2023 CIRP Winter Meeting, the next CIRPe conference (12th CIRPe Global Web Conference 2024) has been confirmed to be hosted jointly by Dr. Nan Yu (University of Edinburgh) and Dr. Murat Kilic (University of Manchester). The theme of the conference is “Advances in cross-scale processing technologies: from ACSM to large scale digital manufacturing”, sponsored by four CIRP Fellows (Profs. Stephen Newman, Joe McGeough, Paulo Bartolo, and Wei Gao).

Awards

Jaydeep Mohan Karandikar (Oak Ridge National Laboratory) received the S.M. Wu Research Implementation Award at the North American Manufacturing Research Conference in June at Rutgers University, New Jersey. He was awarded in recognition of his two papers describing methods for machining parameter selection for total cost optimization considering tool life. The method enables in-process optimization of machining parameters in an industrial environment, eliminating expensive laboratory experiments.

The German Metal Forming Association (AGU) awarded **Till Clausmeyer** (TU Dortmund University) the KARL-KOLLE Prize 2023 (KARL-KOLLE-PREIS) during a ceremony at Professor Matthias Liewald's Institute of Metal Forming Technology (IFU) of University of Stuttgart. On behalf of the Prize Selection Committee and as the current Chair Matthias Liewald presented the prize and a commemorating medal together with Professor Winfried Pinninghoff for the scientific contribution to the international forming community. The Prize is donated by the KARL-KOLLE-Foundation and its Board of Trustees, which was represented by Prof. Winfried Pinninghoff, Prof. Matthias Hermes and Benedikt Kummer. The prize is awarded triennially and previous CIRP-affiliated awardees are Dr. Omer Music, Dr. Chris Valentin Nielsen and Dr. Michael Lechner.

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 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.

2023 Keynote Papers

STC A

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

STC C

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

STC Dn

Biologicalization driven product designs - A. Malshe (1) - Contact: amalshe@purdue.edu

STC E

Digital twin for electro-physical and chemical processes - Y. Guo (1) - Contact: 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

STC G

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

STC M

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

STC O

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

STC P

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

STC S

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

Cross-STC

Biologicalisation in manufacturing - Current state and future trends - K. Wegener (1) - Contact: wegener@iwf.mavt.ethz.ch

2024 Keynote Paper Proposals

STC A

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

STC C

Sustainable machining - P. Arrazola (1) - Contact: pjarrazola@mondragon.edu

STC Dn

Scientific foundation of data science for engineering design - A. Liu (2)
Contact: ang.liu@unsw.edu.au

STC E

Dynamic beam shaping in laser processes - M. Schmidt (2) -
Contact: 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; marion.merklein@fau.de

STC G

Advances in modelling of fixed abrasive processes - P. Krajnik (2) -
Contact: krajnik@chalmers.se

STC M

Hybrid metal additive-subtractive machine tools and applications - S. Smith (1) -
Contact: smithss@ornl.gov

STC O

Virtualization and autonomy in manufacturing systems - G. Putnik (2) -
Contact: putnikgd@dps.uminho.pt

STC P

Integrated metrology for advanced manufacturing systems - A. Archenti (2) -
Contact: archenti@kth.se

STC S

Surface conditioning in cutting and abrasive processes - V. Schulze (2) -
Contact: volker.schulze@kit.edu

Cross-STC

Artificial intelligence in manufacturing

Cross-STC

Industrial symbiosis in discrete manufacturing

2025 Keynote Paper Proposals

STC A

Human-centric assembly in smart factories - L. Wang (1) - Contact: 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

STC Dn

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

STC E

Overcoming barriers to the implementation of multi-material additive manuf. (MMAM) - A. Clare (2) - Contact: adam.clare@nottingham.ac.uk

STC F

Cut the scrap: using less material - 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 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

Finishing of complex surfaces by shape-adaptive processes - J. Yan (2) - Contact: yan@mech.keio.ac.jp

Cross-STC

Production technologies and systems for e-mobility

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 E

Laser based manufacturing for electric machines, batteries, and fuel cells - A.

Fortunato (3) - Contact: alessandro.fortunato@unibo.it <mailto:jose.outeiro@ensam.eu>

STC M

Digital twins for machine tools - A. Verl (2) –

Contact: alexander.verl@isw.uni-stuttgart.de

STC O

Digitally optimised maintenance: path towards sustainability and intelligence - 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

Our CIRP Conferences

12th CIRP Conference on Photonic Technologies (LANE, Sep 2022, Germany)

Welcome back!

After two challenging years of corona virus pandemic with lockdowns, contact restrictions and virtual events, the organizers of LANE 2022 were very pleased to welcome more than 300 scientists from 20 different countries in person, again. The positive feedback from the conference attendees made them happy and let them look forward to LANE 2024.



More than just another conference



Once more, LANE offered a wide range of activities for its attendees: 204 inspiring talks from science and industry, an informative industrial exhibition, relaxing social events, a #people@lane campaign on diversity in science showing the people behind the work, exciting awards, and much more.

The comprehensive and diversified conference program covered the following topics:

- Additive Manufacturing
- Laser Beam Welding
- Laser Beam Cutting & Drilling
- Precision Processing with Short & Ultrashort Laser Pulses
- Surface Treatment
- Simulation & Modelling
- Sensing & Control
- Special Laser Processes
- Laser Safety
- AI & Industry 4.0
- E-Mobility & Batteries

The by now traditional “Country Special” gained a lot of attention, again. This year, five experts from Sweden gave a deep insight into the Additive Manufacturing community of their country.

Top-class keynote speakers

Four renowned scientists gave interesting insights into their research during the plenary session of LANE 2022:



- Yongfeng Lu, University of Nebraska-Lincoln, United States of America: Target fabrication using two-photon polymerization for applications in laser inertial-confinement fusion
- Philip Russell, Max Planck Institute for the Science of Light, Germany: Recent novel applications of photonic crystal fibres
- Joost Duflou, KU Leuven, Belgium: Looking at lasers: A challenging undertaking – Progress in monitoring of laser cutting
- Troy R. Allen, Queen’s University, Canada: Simultaneous high-speed keyhole depth and absorptance measurements in laser spot welding of dissimilar metals

Awards and winners

Not only did the presentations highlight LANE 2022, also the different awards celebrated the distinguished achievements of colleagues in the field.

The ceremony for the Award of the German Scientific Laser Society (WLT) took place during the plenary session of the first conference day. Prof. Ludger Overmeyer announced Dr. Anna Rosa Ziefuß from the University of Duisburg-Essen as the winner of the “WLT Award 2022” for her outstanding work on “Synthesis, surface chemistry, and application of fully inorganic gold nanoclusters by pulsed laser fragmentation in liquids”.



Once again, a prize for the best presentation was awarded. All participants were called to vote for their favored oral presentation. The winner of the “LANE 2022 Best Presentation Award”, sponsored by the International Journal of Extreme Manufacturing (IJEM), is Mirko Sinico, KU Leuven, Belgium, for his talk on "High speed Laser Powder Bed Fusion of M789 tool steel with an optimized 120 µm layer thickness approach". Sophie Grabmann and Avelino Zapata, Technical University Munich, Germany, were the winners of the second and third place.

A special highlight was certainly the ennoblement of the new “Knight of Laser Technology” during the Conference Dinner at the very special location “Ofenwerk” in Nuremberg. After an extraordinary candle light dinner surrounded by classic cars, the knight ceremony was initiated: The last knight, Prof. Craig Arnold, came on stage to give the laudation for the new knight: Prof. Reinhart Poprawe – congratulations!



Networking in relaxed atmosphere



The high percentage of conference participants attending the evening events, which frame the conference's lecture sessions, demonstrate clearly that socializing becomes more and more important in the context of international events – starting with the Casual Reception at the legendary “Kofferfabrik” for a smooth start into LANE, followed by the Night of the Knights with candle light dinner at the center for classic cars

“Ofenwerk” and closed by a “Welcome at home” for all participants in the organizers’ laser labs with guided tours, fresh street food and delicious local beer.

Next LANE conference will take place in Fürth from September 15-19, 2024.

33rd CIRP Design Conference (May 2023, Australia)

The 33rd CIRP Design Conference was successfully organized by the School of Mechanical and Manufacturing Engineering at the University of New South Wales in Sydney, Australia. This prestigious conference marked the first time it was held in Australia. The global society is facing grand challenges of meeting current and future material needs of its growing populations, while staying within the environmental limits of our planet. Meanwhile, the society is experiencing rapid development of technologies such as Artificial Intelligence, Digitalisation and Servicetization of economies. In response to these challenges, the conference theme, "Grand Challenges in Engineering Design," was chosen to explore innovative solutions and



cutting-edge research in engineering design. The aim was to provide a platform for the exchange of ideas and to investigate the role of engineering design in addressing these challenges through innovative design thinking.

The 33rd CIRP Design Conference was primarily organized as an in-person event, with the option for virtual participation. The final conference program featured 156 in-person presentations and 44 online presentations. These covered a wide spectrum of topics on different facets of engineering design, including Artificial Intelligence in Design, Design Automation, Data-driven Design, Design Education, Design for Additive Manufacturing, Design and Manufacturing, Design Innovation, Design & Industry 4.0, Sustainable Design, Design Management, Design Modelling & Simulation, Product Development, Design Optimization, Digital Twin, Design Theory & Methodology, Product Service Systems, Virtual Environments in Design, and Design of (or for) X.

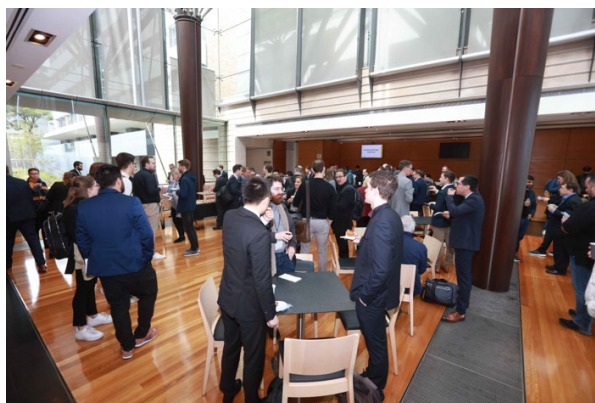
Some key figures regarding the conference include:

- 278 submissions
- 200 accepted and presented papers
- 152 in-person participants and 42 online participants from 21 countries
- 3 keynote speeches
- 18 in-person sessions and 4 online sessions

Prof. Tetsuo Tomiyama (Chair of STC Dn) and Prof. Nabil Anwer (Vice-Chair of STC Dn) presented the mission of CIRP STC Dn, the history of the CIRP Design Conference, and an analysis of trending research topics in engineering design.

Three keynote speeches were delivered, each addressing a particular grand challenge for design:

- “Engineering and AI: The roles of different reasoning modes” by Prof. Tetsuo Tomiyama
- “Designing to the sustainability grand challenges: science-based choices today, for the well-being of our future” by Prof. Tim McAlone
- “Decarbonization of mobility – a strategic life-cycle engineering approach” by Prof. Stephan Krinke



In addition to the scientific program, the conference offered multiple networking opportunities and social events, including coffee breaks, welcome reception at the UNSW Lounge, and gala dinner at the Royal Motor Yacht Club of NSW. These events were highly regarded by the participants as they fostered community building and facilitated new collaborations.

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](#)

From the CIRP Office



Chantal Timar-Schubert

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 2023: The Abstracts of the Papers and Keynote Papers are online on the CIRP Website, as well as the order of presentation of the papers.

The full papers will be available for members on the CIRP Website in July for Volume 1 and in early August for Vol.2.

- We kindly remind you that CIRP members and RAs can download the CIRP Annals directly per entire Volume in pdf from their private Dashboard (you must log in):
<https://www.cirp.net/info-on-cirp-publications/1129-cirp-annals-files-per-volume.html>
- All information for registering to the upcoming General Assembly in Dublin is available online on our Website.