

DEAR FRIENDS, DEAR COLLEAGUES,

IMEKO is in full swing this year, with Technical Committee conferences, plenty of online workshops, and the organization of our triennial World Congress, 2024 Hamburg, Germany, which just opened up last weekend for registrations. You can follow the developments of IMEKO 2024 on their homepage and social media. This edition's unique topic is the 65th anniversary of IMEKO, which was celebrated recently during the IMEKO General Council Sessions. There is more on the Sessions in this newsletter, such as about publishing about the joint effort on digitalization, some facts in numbers about last year and about the World Congress 2027. Regarding personal introductions, meet Professor Elisabeth Costa Montero, Chair of TC13 Measurements in Biology and Medicine. TC20 Measurement of Energy and Related Quantities reports on their recent conference success.

THE CELEBRATION OF THE 65TH ANNIVERSARY OF IMEKO



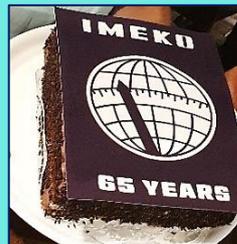
On the 8-9 September 2023, the very well-attended IMEKO General Council Sessions took place in Budapest, Hungary. The hosting organization SZTAKI, the Institute for Computer Science and Control, started by giving a short demonstration in the Innovation and Demo Space (IDS) of more than 400 square metres of floor space. IDS is home to about 20 technologies, including artificial intelligence (AI) based systems, autonomous vehicles, drones and UAVs, and advanced robotics. The participants could see the drone flight, human-robot collaboration with virtual reality support, and the portrait-drawing robot in action.



Following the IDS, Dr László Monostori, director of the Institute SZTAKI and longtime IMEKO Technical Committee member, greeted all at the GC's opening.



A tie or a scarf with the IMEKO logo was presented to the attendees to commemorate the 65th anniversary. SZTAKI gave a very informative brochure about the Institute.



The IMEKO President, Professor Frank Härtig, brought a toast at the festive dinner. As part of the celebration, the cake was served.

GENERAL COUNCIL SESSIONS, BUDAPEST, HUNGARY 2023

Thirty-two countries' Member Organisations represented their Institutes at the General Council Sessions. The Technical Board meeting was also very well attended; some Technical Committees sent more than one officer to the meeting. The discussions were fruitful. As a sign of how IMEKO is growing, the Technical Board approved thirty-two new membership applications in the TCs. There are new TC officers as well. The lists are at the end of this article.

CALL FOR WORKING GROUP MEMBERS WG Digital Metrology

One of the highlights of the TB meeting is the forming of the cross-IMEKO Working Group on Digitalization. As part of the "Joint effort" on Digitalization, IMEKO shall ensure its presence and collaboration in this effort of several organizations.



This is the picture of the signature moment.

For the details: [Digital transformation joint intent](#)

The first steps have already been undertaken; the IMEKO Group is established and will be coordinated by TC6 Vice Chair Dr Hugo Gasca. TCs who wish to participate, please contact the [IMEKO Secretariat](#) by the latest 30 September 2023.

There are some volunteers already, but there is still room for more members. The WG Digital Metrology will shortly announce the first meeting as the international effort continues with large steps ahead.

WG "Branding Guide and Web Presence"

In the changing times, with a lot more visibility on social media and the internet, this initiative is born to set clear, easy-to-follow rules that define the overall look and feel of the IMEKO brand. This WG also awaits participants. Again, your contribution is very welcome! Please contact the [Secretariat](#) to join; thank you.

PUBLISHING

The IMEKO proceedings

"By now (July 2023), there are 586 events in the database and 9067 (8545) papers in our proceedings database. For 2022, 521 DOIs were registered for proceedings papers from ten TCs. This is the first time that DOIs were registered for proceedings papers. The proceedings repository can be found at [IMEKO Proceedings](#).

A new conferences portal was set up for IMEKO based on the free conference managing software Indico. Currently, eight events for 2022 and 2023 are announced or organized and managed there. The system supports the most important event management tasks. This can be just the collection of papers for an event or a full workflow, including abstracts and paper reviews, communication with the submitters, layout tasks, registration of participants, management of conference tracks and the conference programme, publication and room booking. [IMEKO event portal](#).

IMEKO Journals



Tens of thousands of authors and reviewers worldwide can see IMEKO through publications that bear the IMEKO logo.

Major successes to report on the publishing front a few highlights:

Measurement's Impact Factor 2022: >5.5, an increase on 2021. Nearly 7500 submissions last year (2022), > 1,000 more than in previous years and a rejection rate of 82%. (The explanation for that is that quality is such that one in five papers is accepted).

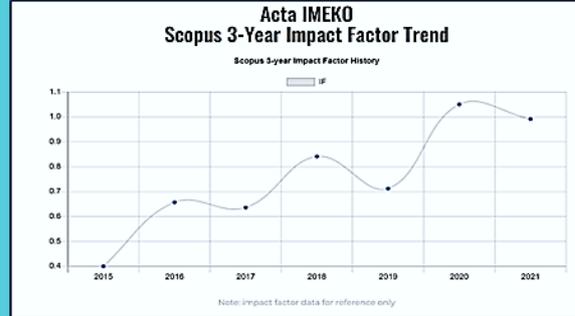
Measurement: Sensors: Cite score rating increasing. As well as Scopus, it is also indexed by the Directory of Open Access Journals (DOAJ), and we have applied for Clarivate indexing recently. A number of Special Issues are underway to create momentum.

Measurement: Food: indexed in DOAJ; we have put forward applications for PubMed Central, Clarivate and Scopus.

Acta IMEKO: Impact Factor 2022 ~1. Increasing number of publications and Increased number of citations with an Increased number of Reviewers and good publication times.

	Issue 1	Issue 2	Issue 3	Issue 4
2020	9	12	11	20
2021	37	28	26	31
2022	32	18	18	17
2023	22	39	-	-

Acta IMEKO is cited by DOAJ



The indexing procedure in Web of Science is ongoing. An antiplagiarism check at the beginning of the review process is introduced. The processing time of the reviews is reduced. The papers will be published as soon as they are ready, encouraging reviewers and supporting the careers of young reviewers. Acta IMEKO, the e-journal of IMEKO, can be found at the internet address <https://acta.imeko.org>

Since the GC meeting in September 2022, Acta IMEKO has published another four issues. Each Issue has a General Track with papers unrelated to a special IMEKO event. The special themes (Selected papers, Special issues) are as follows:

[Vol. 11 No. 3 \(2022\)](#)

Selected papers from the TC17 Events International Symposium on Measurements and Control in Robotics (ISMCR2021) and VRISE2021, Topical Event on Robotics for Risky Interventions and Environmental Surveillance.

[Vol. 11 No. 4 \(2022\)](#)

With Selected papers from the IMEKO TC1-TC7-TC13-TC18 joint symposium and MATHMET (European Metrology Network for Mathematics and Statistics) workshop 2022 and Selected papers from the IMEKO TC24 Special Issue Measurements in Cultural Heritage.

Vol. 12 No. 1 (2023)

Special Issue on metrology and digital transformation

Vol. 12 No. 2 (2023)

Selected papers from IMEKO TC1-TC7-TC13-TC18 joint symposium and MATHMET workshop 2022, 2nd part. Special Issue on the XXX Italian National Congress on Mechanical and Thermal Measurements Selected papers from the 2022 IMEKO TC11&TC24 Joint Conference. Further issues are in preparation.

Special thanks go to Francesco Lamonaca, the Editor-in-Chief of Acta IMEKO.

As of July 2023, a total of 848 DOIs (last report: 745) have been assigned to items (articles, technical notes, editorials, conference submissions) of the Acta IMEKO journal.



NEWS FROM THE SECRETARIAT

Since the last GC, we:
 Published **6 Newsletters**,
 Posted: more than **70 times** on **LinkedIn** and on **Facebook**
 Received **104 TC** membership applications that turned into memberships.
 Processed: **25 TC** events
 Hosted: **2** live events, **7** Presidential Board meetings, **6** Working group meetings, **2** Digitalization meetings for the Technical Board. **10** other meetings with smaller groups, which were very useful.
 We are happy to host more of these. This way, we would like to encourage the Working Groups to continue!

Away from numbers, the Secretariat has a new page under IMEKO [Secretariat](#) with the latest information, and very soon with some guides of task descriptions, such as how to become a TC member, how to chair a TC, etc.



The Secretariat is working on a support page in the [IMEKO.fyi](#) site. This new site shall provide additional information, especially more interactively.

The last information:

An IMEKO-wide survey is prepared for the TCs. Initially, it was meant to help publishing find reviewers, but it has a much wider purpose, namely aiding TCs now. The TB wide introduction of this survey would allow TC Chairs to better manage their members, such as personal data and affiliation updates, and the possibility to mention particular interests and expertise. This would be used to track and stimulate active participation, assign designated roles and duties and other possibilities. The TC survey is an important project the Secretariat runs on behalf of the TCs.



NEW MEMBERS TO THE TECHNICAL COMMITTEES AND NEW OFFICERS

TC6: Wan-Ho Cho; Korea, TC6 and TC7: Khaled M Ahmed; Saudi Arabia, Asoka Gardiye Hewawasan; Sri Lanka, Marat Konkanov; Kazakhstan, TC9: Chun-Lin Chiang; Taiwan, M. Dlamini Wiseman; South Africa, TC10: Chao-Ching Ho; Taiwan, Ádám Szaller; Hungary, TC11: Smagulov Sultanbek; Kazakhstan, Yepenov Tilek; Kazakhstan, Yerassyl Seitpekov; Kazakhstan, Annette Röttger; Germany, Honglei Yang; China, Agne Bertasiene; Lithuania, Vedran Šimunovic; Croatia, TC16: Asoka Gardiye Hewawasan; Sri Lanka, Nic Moiso; Romania, Domenico Gian Luca Mari; Italy, Peter McDowall; New Zealand, Joshua Biggar; USA, Reda El Hayani Marocco, TC18: Jun Izawa; Japan, TC20: G. L. Manjunath; India, Om Bhardwaj; Germany, Rajesh Sadanandan; India, Srinivas Padala; India, Sumit Agarwal; Germany, Liming Cai; China, Prajakta Rajaram Parab; India, Shengkai Wang; China, Solmaz Nadiri; Germany, Xing Chao; China, Ajoy Ramalingam; Germany, Miriam Rabacal; Portugal, Federica Ferraro; Italy, Véronique Dias, Belgium, Srđan Čalija, Bosnia and Herzegovina, TC21: Viktor Witkovsky, Slovak Republic,
Officers: TC2 Chair: Luigi Rovati; Italy, TC9 Vice Chair: Chris Mills; UK TC9 Scientific Secretary: Gregor Bobovnik; Slovenia, TC11 Scientific Secretary: Honglei Yang; China TC16 Scientific Secretary: Prof.Lovorka Grgec Bermanec; Croatia, TC17 Scientific Secretary: Fumihito Kato; Japan

IMEKO PARTNERS

IMEKO Partners participated in the General Council Sessions and presented their organizations' latest developments and future plans.



For **EUROLAB**, Ms Laura Martins, the Secretary-General of EUROLAB, mentioned, among the many projects, the Blockchain-based concept for the digital transformation of the traceability pyramid for electrical energy measurement.

IMEKO has two joint events organized with EUROLAB this year; one will be held in Madeira, Portugal, with the event of TC8-TC11 and TC24 and the other close to Paris, France, with TC23.

For **APMP**, the Asia Pacific Metrology Programme, Mr Xiang Fang, Executive Committee Member of APMP, presented.



Post-Measurement workshop: Making an Impact on Water Quality for Public Health & Safety. This APEC-funded project (SCSC 01 2021) on "Building Laboratory Capabilities to Assure Water Quality in Asia Pacific Economies" " co-funded by APMP, SIM and PTB, was organized in 2023 in Kuala Lumpur, Malaysia. The International Symposium on the Role and Involvement of Metrology in Ensuring Food Safety was held in Ulaanbaatar, Mongolia. This is just a part of the activities mentioned.

Mr Julien Vuillemin-Toledo joined the GC and presented on behalf of **EURAMET**, the European Association of National Metrology Institutes.



He reported, among others, on the Digital Transformation that continues with projects such as Comparison Toolbox, Digital forms eLearning, PlatformDigital, Calibration Certificate, M4Dconf, and Liaison with the CIPM Task Group on the Digital SI.

IMEKO recently signed a Memorandum of Understanding with Mrs Amina Al-Bastaki, the GULFMET President.



GULFMET is a Regional Metrology Organization (RMO) established under the auspices of the GCC Standardization Organization (GSO), bringing together National Metrology Institutes (NMIs) of the United Arab Emirates, Kingdom of Bahrain, Kingdom of Saudi Arabia, Sultanate of Oman, State of Qatar, State of Kuwait and the Republic of Yemen.

THE XXIV IMEKO WORLD CONGRESS HAMBURG, GERMANY



www.imeko2024.

At the recent General Council Sessions, the IMEKO President, who is also the organizing host and Chairperson of the XXIV IMEKO World Congress, Professor Frank Härtig, gave away the latest news on this triennial event's preparations.

Registration is open now for the IMEKO World Congress 2024 in Hamburg, Germany!

Paper submission to the Congress will open in October 2023. The template and all the information necessary will be provided.

Exhibitors and Sponsors are very welcome! (You can find all the details by clicking on the underlined text.)

TECHNICAL COMMITTEE PRESENTATIONS

At the Technical Board meeting, the TC4, Measurement of Electrical Quantities; TC10, Measurement for Diagnostic, Optimization & Control; TC16, Pressure and Vacuum

Measurement and TC24 Chemical Measurements presented their activities from the last year. These presentations and of TC11 are available at the Secretariat.

THE XXV IMEKO WORLD CONGRESS RIMINI, ITALY 2027



According to the IMEKO tradition, the location of the next World Congress after 2024 is already known. The 2027 event is organized by Professor Paolo Carbone, the IMEKO President-Elect and the organizing committee's Chairperson.

Rimini is today among the first five event and conference destinations in Italy.

Rimini is ideal for hosting any event, whether a large congress or a small convention.

It offers the perfect blend of a territory steeped in history, a splendid and diverse inland area, modern accommodation and entertainment facilities, and simple and accessible logistics.

Rimini has a historical city centre just a short walk from the Palacongressi and from the beach; 15 km of beaches with facilities and a modern marina; a surrounding area which abounds with Medieval and Renaissance villages; Roman and Renaissance masterpieces; an art city, with works ranging from Giotto, Piero della Francesca to Eron (an internationally well-known local street artist). Please click on the link below to enjoy Rimini and its beauties:

[Rimini: the best of Italy in one place](#)

INTRODUCING PROFESSOR ELISABETH COSTA MONTERO



The mysteries of nature, which all fields of scientific knowledge strive to reveal, have strongly attracted me since childhood. Influenced by the irresistible appeal of multi- and interdisciplinarity, essential elements for unraveling nature's intricate phenomena, my professional choices were marked by an insurmountable difficulty of concentrating on

a single area of expertise, and I was gently pushed to get involved in a broader range of knowledge domains.

I found myself in a quandary when confronted with the pivotal choice between engineering and medicine for my university focus. As a result, I embarked on a dual journey, exploring a bridge between the Medical School at the Federal University of Rio de Janeiro (UFRJ) and the Physics Department of the Pontifical Catholic University of Rio de Janeiro (PUC-Rio). This forged connection gave me the earliest pleasant flavors of my interdisciplinary research journey, focusing on ultra-weak magnetic field measurements for biomedical applications, specifically, Biomagnetism.

The follow-up resulted in an academic background with a Medical Doctor degree,

Internal Medicine specialization, M.Sc., and Ph.D. in Biophysics (UFRJ). In parallel to Ph.D., I studied Theology (PUC-Rio), thus being introduced to the universe and terminology of the social sciences and humanities. However, this latter degree could not be fully completed because after concluding the PhD in Brazil, I had to move to be a Postdoctoral Research Fellow at the Institute of Advanced Biomedical Technologies (ITAB) in Italy.

While still focusing my research on biomagnetic measurements, the journey was marked by coincidences associated with my future commitment to Metrology. Biomagnetism is a scientific domain that deals with measurements of the ultra-weak magnetic fields generated by bioelectric sources. This research domain was born from a revolution in the sensitivity of magnetic sensors brought about by the innovative creation of the Superconducting Quantum Interference Device (SQUID).

One of the inventors of the SQUID, James Edward Zimmerman (Jim), affiliated with the US National Institute of Metrology (NIST-National Institute of Standards and Technology), gave me the honor of having him as a member of my doctoral defense committee. As a valuable curiosity, transcending the academic collaboration, Jim often accompanied me on volunteer work I used to do with low-income communities. Jim often accompanied me on volunteer work I used to do with low-income communities. Soon after his first visits to the community, when he returned to the USA, he wrote letters reporting his reflections on social issues and possible solutions to ensure a fairer sharing of the world's resources. In his letters, he always asked me for information from everyone he knew in the community, particularly concerned about the health conditions of some whom I used to provide home medical care in his company and whom we visited often.

This concern was mutual despite, curiously, people from the community and Jim not speaking the same language. In many of Jim's letters, he emphasized the tenacious strength of the underprivileged community women when they engaged in a collective struggle.

In tribute to James Edward Zimmerman's legacy, when he was seriously ill, the Biomagnetism scientific community convened at the Massachusetts Institute of Technology for a meeting. Researchers were invited to contribute with reflections on Jim's life, and mine, which was based on his involvement in underprivileged communities, emerged distinctive by capturing facets unseen by others. This narrative was publicly read at the event and, as Jim confided with me, resonated deeply with him. This fact emphasizes the profound impact of genuine human connections, as also stressed in the words of Archbishop Hélder Câmara that Jim and I very much appreciated: Knowledge puffs up, but charity edifies (1 Corinthians 8:2).

As might be expected, my deep appreciation for nature finds expression via other facets beyond scientific issues and is also reflected in my enthusiasm for surfing. In this context, the inherent "research" is to continuously search for a well-forged wave configuration to join with so that, through a harmonious union, one can pursue its path, driving on the surface synchronously attuned to its energy propagation. It is incredible how nature so naturally provides so much fun!!!

Back to science discussion, another connection with the Metrology community that research in Biomagnetism gave me was that it led me to the Physikalisch-Technische Bundesanstalt (PTB), Germany's National Metrology Institute, where I interacted with colleagues who significantly influenced my next steps. I was advised to use the micro-squid sensors array that had just been built in Jena and was very suitable for the biomeasurements I used to carry out. There, while performing measurements of the magnetic field generated by the bioelectric

activity of cardiac tissue from isolated rabbit hearts, being pregnant with twins, I harnessed another measuring system available in the laboratory to evaluate and hopefully demonstrate the possibility of identifying the detailed magnetic signal from each fetus's heart, despite their proximity within a twin pregnancy. Thus, while still in the womb, the kids could contribute to the Science of Measurement by undergoing non-invasive and innocuous measurements of the magnetic field generated by the propagation of bioelectric currents in their hearts, using fetal magnetocardiography (FMCG).

After my postdoctoral work, I assumed teaching responsibilities at the Physics Department (PUC-Rio), and later on, I was invited to join the teaching staff of the Postgraduate Programme in Metrology, which greatly expanded the topics' spectrum of my research.

While delving into this knowledge field, I came across the ethical foundations underlying the Science of Measurement. I was enchanted with its fundamental contribution to safety in all its possible meaning dimensions, with a pursuit for the accuracy of results and transparency about their properly assessed quality when expressing them. However, it also became evident that, despite its high relevance, metrological concerns in biomeasurements were still newborn compared to physical and chemical quantities measurements. In the Metrology Programme, I had the privilege to work alongside Prof. Mauricio Frota, who was entirely engaged with IMEKO's activities and interests and was the founder of the Postgraduate Programme I joined. Mauricio introduced me to the IMEKO community, a journey that commenced at the 2003 IMEKO World Congress when I had the opportunity to help in the call for the next World Congress to be held in Rio de Janeiro in 2006, which included a social event with typical Brazilian drinks promoted by Mauricio. Although my initial engagement led to honorable TC7 membership years later, on that occasion (2003),

I had a recommendation letter from the Brazilian MO to become a member of TC13, whose meeting, unfortunately, didn't take place. Some years later, I took on the responsibilities of the TC7 Scientific Secretary, and more recently, I earned a TC13 membership and have been honored to serve as TC13 Chairperson.

The enchantment with the rigorous approach to measurements in all fields of application led me to commit to attracting the biomedical community and its demands for this knowledge and engagement. I realized that the possible effective and practical way to introduce metrological culture into the clinical environment should be through medical and nursing schools. Ultimately, the Biomedical Engineering scientific community, in turn, embraced the new topic much better and immediately.

One of the strands of research with which I engage stands out for its distinct motivation. This particular research focuses on the recently uncovered phenomenon of Giant Magnetoimpedance (GMI). This effect is used as a sensor for the development of low-cost magnetic field transducers to measure the ultra-weak biomagnetic field, opening up the possibility of surmounting the inherent drawbacks of the SQUID magnetometer. These superconducting systems require cryogenic cooling, which results in substantial manufacturing, installation, and operating costs. The development of GMI measuring instruments for biomedical applications resonates deeply with one of Zimmerman's dreams: to drastically reduce the cost of the SQUID. Developing a cost-effective biomagnetic device would lay the foundations for broader adoption in clinical settings of the non-invasive and innocuous diagnostic tool capable of providing physiological information beyond the reach of existing biomedical approaches.

Parallel to my entry into the field of Metrology was born the twins whose heart's magnetic field had been measured during their gestation period.

As a result, they grew up with metrology concepts being implemented in their daily lives and, naturally, carried them into their schooling experiences, where they even shared the latest information from the SI brochure with the teaching staff, who was very receptive to it.

With eyes on the universal spectrum of applications of the Science of Measurements and the prominent acknowledgment of the great difficulties to overcome to reach this dream, the orientation given to the 2017 Joint IMEKO TC1-TC7-TC13 Symposium held in Rio de Janeiro, which I am pleased to have organized, was expressed in its central theme: "Measurement Science Challenges in Natural and Social Sciences." The event was marked by the fostering of addressing the most challenging tasks of dealing with the most complex quantities, particularly those associated with Biological, Biomedical, and Psychosocial measurements. I could not resist the compelling pull to the thrilling adventure of working in the challenging research field of Human and Social Sciences measurements. Therefore, after a while, I started working with my daughter, one of the twins, who had concluded her Social Sciences degree and had enrolled in the Postgraduate Programme in Metrology for her master's degree.

She was eager for quantitative approaches and to guarantee reliable results for psychosocial measurements.

The IMEKO's history is woven into my university lectures, where students are encouraged to embrace Metrology's historical narrative and their integral role in it. For instance, IMEKO's birth in 1958 is celebrated alongside other milestones in measurement, such as OIML's conception in 1955, as well as, in 1960, the introduction of the International System of Units (SI) and the redefinition of the meter based on the krypton 86 radiation, which allowed, for the first time, to connect the unit of length with an atomic property.

As a vital player in the global exchange of scientific knowledge in measurement and instrumentation across every field of knowledge application, IMEKO promotes reliable and comparable measurement results, contributing to a scientific development that encompasses the appropriate tools for guaranteeing planet preservation and the global safety of living beings. It is a privilege to be part of the International Measurement Confederation and engage in its fascinating journey.

Written by Prof. Elisabeth Costa Montero, Chair of TC13 Measurements in Biology and Medicine and Scientific Secretary of TC7, Measurement Science.

TC20 CONFERENCE: ENERGY OF FUTURE METROLOGY AND RESEARCH



The IMEKO TC20: ICME 2023 came to a close on 6 September 2023, leaving the participants with new ideas, partners and a renewed opportunity for collaboration. Throughout the conference, participants had the chance to listen to a diverse range of speakers in various sessions designed for energy measurements and related topics and network with industry partners, metrology associates, and research professionals, offering invaluable insights into their respective fields.

Here is a brief look at some of the highlights from this event.

Inspiring welcome address



The conference kicked off with a short and inspiring welcome address from Prof. Dr Frank Härtig, President of IMEKO and Vice President of Physikalisch-Technische Bundesanstalt (PTB), followed by the Technical Committee (TC20) Chair Prof. Dr Ravi Fernandes which set the stage to the different planned sessions and opened the door to the participants to listen to activities inside PTB on Energy Measurement and Research from various competence centres.

Technical Sessions

Energy is a broad field, as are the measurements of energy quantities in these different fields.



Secondary parameters also influence the measurement chain; precise measurement and knowledge in different work areas are important.

The technical sessions covered topics from metrology for energy transition, photovoltaics, hydrogen metrology, dynamic pressure metrology, metrological efficiency comparison in wind turbine converters, laser diagnostics in energy and thermo-chemical conversion systems, flow measurements under carbon capture and storage conditions, metal energy carriers and ammonia, commonly used refrigerants and microgravity measurements to explore flame speeds accurately, sustainable aviation fuels, chemical kinetics and emissions. The level of engagement and enthusiasm in these sessions was awe-inspiring, and it occupied the speakers during the coffee breaks with extended discussions.

Women in Metrology and Energy Research (WIMER)



L-R: Ms. Yan Yan Beer, Dr.-Ing. Gisa Foyer, Jun Prof. Dr.-Ing. Federica Ferraro, Dr. Tara Liebisch, and Prof. Dr. Benoîte Lefort

As part of the WIMER network, a panel discussion on the topic "The future of metrology and energy research: women pioneers and innovators" was held during the conference. The session was open to both men and women to exchange their perspectives on gender bias, the significance of mentorship and networking and the importance of fostering a supportive work environment. The Equal Opportunities Office from PTB was also present to address

some of the discussion points and raise awareness about the opportunities within PTB.

Poster and Oral presentations

All three days of the conference featured poster presentations during coffee breaks from participants, where they had ample opportunities for discussions and networking. The dedicated poster session on the third day evaluated the poster based on various factors, and a poster award was announced during the closing address. Similarly, four oral doctoral-post doctoral presentations were part of the technical talks, and one was judged for an award during the closing address. Dr Alaa Hamadi from the University of Orleans, France, was awarded the best oral presentation. Mr. Yi-Hsiang Liao from the University of Kent, United Kingdom, was awarded the best poster presentation.

Lab Tour and Task Group Discussions

The participants had the opportunity to visit the photovoltaic lab (4.52&4.53), battery lab (3.55), H2 metrology lab (3.7), and physical chemistry lab (3.32&3.34) as part of the conference activities. At the same time, task groups on fundamental reactors were identified that brought in like-minded professionals and potential collaborators to work on identifying essential tasks that could be approached with a harmonized effort. This prospect will help bring standardization activities in their energy research and metrology field, which is one of the critical goals of PTB and IMEKO TC20.

Concluding remarks:

The ICME 2023 was a significant step forward from the previous activities for IMEKO TC20. In continuation of our efforts, we promised to meet the participants and potential attendees at the IMEKO World Congress 2024 in Hamburg, Germany and for ICME 2025 at Nevers, France, organized by Institut Supérieur de l'Automobile et des

Transports-ISAT, France. We eagerly anticipate similar interactions and greater collaboration and innovation at the upcoming two events in the following years.

We also take this opportunity to thank the sponsors Laser Components Germany GmbH and Helmholtz Fonds e.V for supporting our conference activity, as well as IMEKO for providing a global platform for researchers and metrology associates to work on solutions directly benefiting society.

Metrics: More than 55 participants, 15 representative nationalities, with approximately 27% women participation.



L-R Row 1: Prof. Benoîte Lefort, Dr-Ing. Joachim Beeckmann, Prof. Fei Qi, Dr Nils Hansen, Prof. Dr Yong Yan, Dr Alaa Hamadi, Dr Thomas Gerbert, Mr Mircea Pop, Ms Yan Yan Beer, Ms. Ghazaleh Esmaeelzade, Ms Azin Nezhad.

L-R Row 2: Ms Dorothea Fabeck, Dr-Ing. Solmaz Nadiri, Ms Ge Guo, Dr Musthapa Fikri, Ms Helga Bettin, Dr Guangyu Dong, Dr Hongchao Chu, Ms Andrea Chamorro, Dr Arnas Lucassen, Dr Zeynep Serinyel, Mr Peter Widera, Dr Alejandra Martinez, Dr Oliver Bölker, Mr Yi-Hsiang Liao, Mr Pedisetti Tejes, Mr Tim Huylebrouck, Dr Zhechao Qu.

L-R Row 3: Ms Ella Jones, Dr-Ing. Ajoy Ramalingam, Prof. Dr Fabien Halter, Mr Leopold Seifert, Dr-Ing. Detlev Markus, Prof Dr Ravi Fernandes, Dr Sumit Agarwal, Dr Denghao Zhu, Prof. Dr-Ing. Christian Hasse, Mr Mengdi Li, Dr-Ing. Federica Ferraro, Dr-Ing. Gisa Foyer, Dr Fraddy D'Souza, Dr Tara Liebisch, Mr Gaurav Priyadarshi, Mr Guanyu Wang, Dr Kai Moshhammer.

FINALLY THE LIST OF EVENTS STILL TO COME

TC17 ISMCR 2023 21-22 September 2023 at the Technical University of Iasi, Romania

TC10 Conference MACRO meets NANO in Measurement for Diagnostics, Optimization and Control on September 21-22, 2023, in Delft, Netherlands

TC4 Academia Meets Industry, the 26th IMEKO TC4 International Symposium and the 24th International Workshop on ADC and DAC Modelling and Testing (IWADC) in Pordenone, Italy 21-22, September 2023

TC4 Metroarchoe 2023 19-21, October, Rome Italy

TC8, TC11 and TC24 joint conference 11-13 October 2023 Madeira, Portugal. TC8: Traceability in Metrology New Challenges and Opportunities, TC11: TIC for Confidence and Safety, TC24: New Perspectives in Chemical Measurements

Asia Pacific Measurement Forum on Mechanical Quantities (APMF2023), cosponsored by IMEKO, from 20- 24 November in Chengdu, PR China.

The home of the IMEKO World Congress 2024



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