



DEAR FRIENDS, DEAR COLLEAGUES,

We are coming to the end of 2023.

For IMEKO, it has been an excellent year. By December, we had 28 events and welcomed 116 new members. 117 articles with editorials included were published in our online journal Acta IMEKO, up to the moment of writing. Another publishing news, the 4th journal with Elsevier, "Measurement Energy", is in the last bits of preparation before it is launched.

In December, a festive time is ahead of us. From the IMEKO Member Countries, the delegates of Thailand, Japan, Brazil, the Arab Emirates, and Croatia were kind enough to share their customs of the country at this time of the year.

We also have the recent successes told by TC4, "Academia Meets Industry", a conference in Pordenone, Italy, TC10, "Macro Meets Nano", the very recent TC23 7th IMEKO foods conference in Paris, France, and the TC4-related Metroarchoe 2023, in Rome, Italy.

From the Industrial contacts Advanced Cooling Technologies Inc. (ACT) from the United States exhibiting at the World Congress, 2024, gives a short introduction of their company.

GREETING FROM THE IMEKO PRESIDENT

Dear IMEKO Community, dear Colleagues, dear Friends,

As we reflect on 2023 and celebrate IMEKO's 65th anniversary, we take great pride in our significant achievements as a key player in advanced measurement technology and in boosting global scientific collaboration in this field.

As in previous years, many TCs once again organized outstanding conferences and inspired an international audience.

Unfortunately, I was only able to attend some of the conferences myself. Additionally, IMEKO demonstrated a positive financial balance this year, a testament to our sustainable and efficient management and work. With your commitment, you form the basis of our confederation and help to ensure that metrologists from all over the world can meet in an international network - regardless of political conflicts and different systems. I cannot thank you enough for this.

This year also marked the strengthening of our professional identity through the establishment of TC best practices and the final decision to establish a Working Group for Branding and Web Presence. A cross-TC working group led by Hugo Gasca of TC 6 is dedicated to advancing our digitalization initiatives. This enables all interested TCs to shape the upcoming developments in the field of digitalization together with the Metre Convention (CIPM/BIPM) and partners from global organizations.

I am excited that the General Council has approved a new IMEKO Journal with Elsevier, named *Measurement: Energy* this year. This journal represents a significant addition to our growing body of renowned scientific publications. The progress in our publications, particularly *Acta IMEKO*, reflects the unwavering dedication of our researchers and editors. The increase in publishing frequency and the assignment of additional DOIs are testaments to the growing impact of our efforts.

The initiatives of the Secretariat in enhancing storage and workflow solutions, along with our expanded social media presence and fruitful partnerships with organizations like AFRIMET, APMP, GULFMET, and EURAMET, highlight the success of our collective endeavours and international visibility.

Looking ahead to 2024, the engagement and involvement of our community become increasingly vital. In addition to the topics already mentioned, the upcoming XXIV World Congress in Hamburg under the theme 'Think Metrology' is expected to be a significant highlight of the year.

The dynamic atmosphere of the CCH Congress Centre in Hamburg offers the perfect setting for this eminent event, and I am eagerly awaiting the opportunity to meet all of you there. This is also the time when Paolo Carbone will take over the presidency of IMEKO for the next three years, and we will elect a new president-elect.

In conclusion, the tremendous accomplishments of 2023 have laid a robust foundation for IMEKO's future success. Our shared commitment, innovation, and teamwork position us well to effectively tackle future challenges and seize new opportunities.

As the end of the year is approaching, I would like to thank you all for your excellent work. With your commitment to all the different TCs, in building new networks and organizing conferences and events, you are all part of the moving engine in a network of scientists acting worldwide under the quality seal of IMEKO.

In the name of the Presidential Board, I wish you, your family and your friends a good start to the New Year in which we - as in past years - will be working together peacefully.

Warm regards and heartfelt thanks to all of you,

A handwritten signature in blue ink, reading "Frank Nantzy". The signature is written in a cursive style with a large, sweeping initial 'F' and a long, horizontal tail on the 'y'.



The Organization Committee of the XXIV IMEKO World Congress wishes you and yours a wonderful holiday season and a happy and peaceful New Year. We are very grateful for your support and ongoing interest in the XXIV IMEKO World Congress. We look forward to an exciting year and meeting you in Hamburg!

GREETING FROM THE IMEKO SECRETARIAT



Dear Friends, dear Colleagues,

2023 flew by with a lot of activities. Thanks to you, we had so many great chances this year to meet you online with you, exchange ideas and work on new projects. It's been very fruitful. We also met many of you in Budapest, Hungary, at the General Council Sessions, where, besides the IMEKO-related discussions, we had several delightful personal encounters.

Thank you for helping us, stimulating us to do our best, and serving you and the IMEKO community!

Thank you for your responsiveness and excellent ideas in 2023, which made IMEKO's year so successful and fruitful.

Thank you for your enthusiasm and trust!

WE WISH YOU AND YOURS A PROSPEROUS 2024!

Kristine and Zoltan, IMEKO Secretariat

CHRISTMAS IN THAILAND: A UNIQUE BLEND OF TRADITIONS



Christmas is not a traditional holiday in Thailand, as the majority of the population is Buddhist. However, the country has embraced the festive spirit in recent years, and many people enjoy celebrating the holiday in their own way.

Decorating



Shopping malls and hotels are adorned with Christmas lights and decorations, and many homes also have Christmas trees and other festive ornaments.

Eating

Thai people may not eat a traditional Christmas dinner, but they enjoy indulging in special dishes during the holiday season.

Gift-giving

Gift-giving is a popular tradition in Thailand, and Christmas is no exception. People often exchange gifts with family and friends.



Overall, Christmas in Thailand is a time of celebration and joy. While the holiday may not be celebrated in the same way as in Western countries, Thai people find their own unique ways to enjoy the festive season.

Written by Ms Thanakporn Nontachart, International Relations Office at the National Institute of Metrology NIMT (Thailand).

CHRISTMAS IN BRAZIL

For me, the Christmas spirit intensifies when we start organizing the MMD of INMETRO Christmas celebrations in early November, to be held in mid-December each year. During this event, we come together with a BBQ, some beer (as it is summer in Brazil), and, of course, a soccer match between the younger and older generations.



On the 24th and 25th of December, I spend my time with my extended family, enjoying this time to express our gratitude for the love, hope, and joy we find in our hearts."

Written by Renato Reis Machado, TC5 Chairperson, working at the National Institute of Metrology, Quality and Technology (Inmetro-Brazil)

CHRISTMAS IN THE UNITED ARAB EMIRATES

In the United Arab Emirates (UAE), Christmas Day is just a normal working day, but with a large expatriate population, many celebrate Christmas. The churches hold services for many traditions in many languages, and most hotels and shopping malls have Christmas decorations.



In December, the weather in the UAE is cool, so it is the perfect time to head to the

beach or out to the desert.

Written by Mr. Jon Bartholomew, Emirates Metrology Institute, United Arab Emirates.



CHRISTMAS ILLUMINATION IN JAPAN



During the Christmas season in Japan, enchanting illuminations light up the night in various locations. In cities, commercial districts, shopping malls, and around train stations, the streets come alive with vibrant displays as Christmas approaches. Some places showcase grand Christmas trees and glittering decorations that captivate visitors. Parks and plazas are also adorned with a diverse array of colourful Christmas illuminations. In addition to colourful illuminations, there are uniquely Japanese

illuminations using bamboo, like the one captured in the photo. Illumination events typically span from late November to the end of December. People revel in the festive spirit by leisurely strolling with family and friends, revelling in the sight of the Christmas illuminations, and capturing moments with photographs.



Written by Dr Tokihiko Kobata, Deputy Director General, National Metrology Institute of Japan (NMIJ), AIST (Photos: courtesy of Ms. Kimie Suzuki, a member of the NMIJ staff)

CHRISTMAS IN CROATIA



Ho, ho, ho in Cro Cro Cro,
The familiar smell of baked gingerbreads, a well-known sound of specific songs that are sung every year on a certain day in December, family gatherings, lots of presents, decorations that sparkle so bright that one does not need a light during a night walk on a street and a tree in the middle of a living room. To rephrase Michael Bublé a bit: "It's beginning to sound a lot like Christmas", one of Croatia's most important holidays. The most usual and probably global characteristics of Christmas are: a giant pine tree that will cause a tremendous cleaning (unless it's fake), an old, nice guy with a long, white beard*, who always drinks Coca-Cola and defies physics by riding in those

tiny sleigh, family reunions that always consist of that cousin or aunt whom you wish you could avoid and presents that stand below the Christmas tree while we anxiously wait for midnight to open them.

(The beard is especially important because otherwise, you might confuse Santa Claus with Mr. Mladen Jakovčić, president of the Croatian Metrology Society, who is its identical (not digital) twin, minus the beard.)

There are lots of Christmas customs and traditions in Croatia. Some are taken from other countries and incorporated into our culture, while others have remained permanent over time and are unique to our country. In Croatia, the Christmas atmosphere begins with lighting up the first candle on an advent wreath. Soon, the whole city is decorated with Christmas trees, lights, and other decorations. Also, Christmas markets are organized every year where one can see wooden chalets that offer different buying choices.

Furthermore, one popular tradition in Croatia happens on the 13th of December (Saint Lucy's Day) when most people are planting wheat, which is put below the Christmas tree or on a table. Usually, next to wheat, people place apples, money (sometimes a vase with wheat is safer than a bank) or straw. Christmas Eve is typically the day when the holiday spirit really emerges. People are putting Christmas decorations in and around their homes in almost every part of the world, so NASA is probably having the time of its life. It was conventional to decorate a Christmas tree with ornaments made by children and other household members, although today, baubles and Christmas tree lights are more popular. Also, Christmas movies like "Home Alone" or "Die Hard" became indispensable to this holiday. Don't let titles fool you; these movies can be quite fun. Everyone is awake till midnight; for some, it is time to go to a Midnight Mass where Christmas carols are sung.

For others, midnight is the time for opening presents, which are, of course, brought by Santa Claus. On Christmas Eve, the common food is cod, and for dessert are the inevitable traditional Christmas cakes: orehnjača (cake made of walnuts) and makovnjača (cake made of poppy). (Ask TC23 for details.)

On Christmas, the immediate and extended family gathers around the Christmas table, where there are all sorts of different dishes. Food for Christmas lunch usually depends on the country's region. Yet, in Zagreb, people usually serve turkey with mlinci (thin dried flatbread). The whole Christmas is dedicated to family and leaving bad things behind.



Let's say something about celebrating Christmas in our little team, ISO/IEC 17025 accredited laboratory Metroteka. Since Christmas represents a special day with unique traditions, we at Metroteka try to make something different and new for our clients every year. For example, sometimes we send Christmas cards in the form of a metrological horoscope so people can check what they should expect in the upcoming 12 months. (See next page.)

Written by Siniša Prugovečki, General Manager LorisQ Inc. (USA), Metroteka d.o.o. (Croatia), and member of the Croatian Metrology Society and Ms Tania Pukljak-

The Metrological Horoscope was created by Siniša Prugovečki, General Manager LorisQ Inc. (USA), Metroteka d.o.o. (Croatia), and his team.

METROLOGICAL HOROSCOPE 2024.



Micrometer
21.3.-19.4.

Even though you tend to be nitpicking and it seems like you are making progress in micro (baby) steps, try to see a bigger picture this year.



Barometer
20.4.-20.5.

You constantly feel under pressure and this feeling is going to be permanent. That does not mean conditions won't be favorable.



Torque wrench
21.5.-20.6.

Your first instinct is an momentous application of force, which is expected from you, but be careful not to snap from the inside.



Hygrometer
21.6.-22.7.

You will be very sensible for the things that others won't even notice. You have to bear in mind that it is all relative.



Autoclave
23.7.-22.8.

You will feel at your very best in your own arrangements. Cycles will be favorable and a stable condition will be dominant in every cycle.



Piston pipette
23.8.-22.9.

If you repeat the same errors systematically, you should question yourself. Maybe you are just in the wrong hands.



Scale
23.9.-22.10.

Even though you always successfully balance business and private life, you should watch your eccentricity. It could cost you greatly.



Centrifuge
23.10.-21.11.

The world doesn't have to revolve around you. May this year be the one in which you will stop yourself and enjoy the moment.



Thermometer
22.11.-21.12.

Don't waste your time on hot and cold relations. In summer months you will experience a steamy adventure.



Temp. chamber
22.12.-19.1.

In the upcoming period you should ignore your surroundings. Devote to yourself and your own stability.



Hydrometer
20.1.-18.2.

You will face some difficult situations, but in spite of your own fragility you will emerge to the surface successfully.



pH pH-meter
19.2.-20.3.

Every experience is valuable. Don't let your problems leave a sour mark, just smile at everything that is to come.

THE 7TH INTERNATIONAL IMEKOFOODS CONFERENCE

The 7th International IMEKOFOODS conference on "Metrology on Food and Nutrition" was organized between October 25 and 27 in Paris, France, by the French Agency for Food, Environmental and Occupational Health & Safety (ANSES), with the financial support of Euramet EMN Safe and Sustainable Food. In total, 100 participants from 15 countries contributed to the lively discussions, posters and oral presentations related to metrology in food safety, food quality and nutrition.

The title was: "Worldwide Food Trade and Consumption: Quality and Risk Assessment".



The conference was a milestone in the IMEKOFOODS series, with a dedicated "Metrology in Risk Assessment" session addressing the need for sound metrological data to support public health policies.

The event was opened by the Conference Chair Petru Jitaru, TC23 Chair Joris Van Loco and Gilles Salvat, Deputy General Director for Research and Reference of Anses, addressing the need for metrological sound data to support governmental decisions, new developments in the agro-food sector, risk assessment, research, quality control of food, food safety inspections, etc.



Petru Jitaru, Conference Chair

Five renowned keynote speakers were invited to give the latest state of the art and their views on various aspects of food safety, food quality and nutrition: Frans Verstraete (European Commission) "EU Policy on Contaminants in Food: Recent Developments and Outlook", Prof. Jens J. Sloth (DTU) "Elements and their Chemical Species in Food-Recent Developments from Analytics in Support of Quality and Risk Assessment", Prof. Bruno Le Bizec (LABERCA) "Towards a Broader View of the Consumer Chemical Exposome Strategies and Technical Solutions", Luc Ingenbleek (WHO) "Total Diet Studies: Narrowing Down Potential Concerns to Identify Priority Food Safety Issues" and Bruno Dujardin (EFSA) "Combined Exposure to Multiple Chemicals: Working Towards the Implementation in Regulatory Risk Assessment".



In total, 48 oral and 40 poster presentations were shown in eight scientific sessions:

- Advances in Food and Nutrition
- Analytical Approaches & Tools in Food and Nutrition
- Food Authenticity & Food Fraud
- Food Composition and Consumption Data
- Food Packaging and Migration Studies
- Impact of Food Cooking & Packaging on its Quality and Safety
- Metrology in Support of Risk Assessment of Contaminants in Food
- Regulations and Metrology for Worldwide Food Trade



Best poster award with Thierno Djallo and Luc Ingenbeek

"The best poster award for young scientists" was given to Thierno Djallo for his excellent scientific contribution entitled: "Bivalves as sentinel species to follow-up the eco-exposome: the sample preparation as a major challenge".



There was also room for networking at the welcome reception and nutritious lunches during the conference.



In the picture, participants enjoy the beautiful scenery of the "city of lights", Paris, with a boat trip on the Seine River and a Gala Dinner with an after-party.





In the picture from left, Petru Jitaru, Isabel Castanheira and Joris Van Loco

Dr Isabel Castanheira was presented the first Imekofoods Award for her outstanding scientific work on metrology in food and nutrition and her initiatives and work as former IMEKO TC23 Chair.

The 7th IMEKOFOODS conference was a success with high-quality contributions. The saga of the IMEKOFOODS series will continue. We look forward to meeting you at the 8th IMEKOFOODS, which will be held in Ljubljana, Slovenia, in 2025.

Written by Joris Van Loco, TC 23 Chair

TC10 MACRO MEETS NANO IN MEASUREMENT FOR DIAGNOSTICS, OPTIMIZATION AND CONTROL

The IMEKO TC10 conference series started in 1979. The 19th "MACRO meets NANO in Measurement for Diagnostics, Optimization and Control" was held in Delft, Netherlands, on September 21-22, 2023. [Macro Meets Nano...](#)

It is a pleasure to report that we had a successful and pleasant IMEKO TC10 conference. We created a forum for deepening the knowledge in exchanging ideas on methods, principles, instruments, technologies and IT tools, standards, industrial applications, conformity assessment, quality management and measurement challenges on Diagnostics, Optimization and Control, and their diffusion across the scientific community. Participants had an excellent opportunity to meet with top specialists from industry and academia worldwide and to enhance their international cooperation. The programme featured scientists and experts as leading keynote speakers for selected presentations on the main topics. TC10 organizes its annual conferences in different locations. The last two were in [Warsaw](#), Poland, and [Berlin](#), Germany.

Naturally, TC10 has always made significant contributions to all IMEKO World Congresses (the recent two congresses: 2021: Yokohama, Japan (online), 2018: Belfast, United Kingdom) (see for [details](#)). During our last conference in Warsaw in 2022, IMEKO TC10 Members decided to organize the next conference in the Netherlands.



With many years of loyal membership, [Dr Lauryna Siaudinyte](#), our TC10 member at the [National Metrology Institute \(VSL\)](#) of the Netherlands located in

Delft, was our main local organizer for the conference. Dr Siaudinyte helped on-site with the Hungarian member organization's [SZTAKI](#) initiative. Thanks to her, we found an excellent event location, the [Hotel Arsenaal](#), in the historic city of Delft, surrounded by small canals, where the participants could explore and enjoy the typical Dutch scenery.



As usual, we had a two-day conference with the traditional [Schedule](#); after the opening ceremony, the first invited Keynote Lecturer was followed by two scientific sessions. The TC10 members' meeting took place at the end of the day, an event always open for all participants. The conference Gala Dinner was held at a local brewery-restaurant [Delfts Brouwhuis](#), where the participants enjoyed local cuisine specialities and had long conversations, which resulted in new partnerships and cooperations.

The second day started with two scientific sessions, and the second invited Keynote Lecturer opened the final session.

The award ceremony closed the conference. A presentation selection is available on the conference website under the [Programme](#) menu. The related pictures can be found under [Photos](#).



Let's see some Key Performance Indicators: we had 28 contributions, and 21 were finally accepted. 23 presentations were held, including the two Invited Lecturers' talks. The authors of the scientific papers came

from 13 countries, 29 people participated in the conference, and 65% were 35, which is a promising ratio considering the future of IMEKO TC10 on Measurement for Diagnostics, Optimization and Control.

Dr Richard Quintanilha, our first invited Keynote Lecturer, is an Optical System Engineer, Corporate Research and Technology for the Carl Zeiss AG (Germany). His lecture's title was: "Carl ZEISS and Metrologies".

His presentation incorporated the general introduction of the ZEISS Group and its different segments, with a special place for Semiconductor Manufacturing Technology. The talk focussed on manufacturing and associated metrology requirements challenges through some examples from different company sectors. A more detailed presentation of the DUV-EUV optics manufacturing and metrology was discussed.



In the picture, Dr Richard Quintanilha

The second invited Keynote Lecturer, Mr Poul Erik Hansen, is a Principal Scientist at the Danish National Metrology Institute. The lecture title was: "Traceability and Uncertainty in Optical Measurements". The presentation addressed the nanofabrication technology and measurement uncertainty evaluation of nanostructures used in the semiconductor industry and the importance of optical measurement techniques such as microscopy, spectroscopic scatterometry, spectroscopic ellipsometry and reflectometry.

Mr Hansen provided users of metrology and the general public with a simple yet comprehensive overview of the subject for those unfamiliar with the topic requiring an introduction and those involved in metrology at various levels and who wanted to know more about the subject or simply gain specific knowledge. Metrology is the science of measurements and covers three main activities. 1) The definition of internationally accepted units of measurement, 2) The realization of units of measurement by scientific methods and 3) The establishment of traceability chains by determining and documenting the value and accuracy of a measurement and disseminating that knowledge.



In the picture, Mr Poul Erik Hansen

The lecture focused on the third aspect, with examples of current work to establish an internationally recognized traceability chain for optical microscopy, reflectometry, scatterometry, and ellipsometry at the micrometre and nanometer scales shown during the presentation. To do this, we need measurement institutes/companies providing high-quality measurements that can manufacture high-quality physical samples and a protocol for how each participant should measure and analyze the samples to obtain the required measurement and uncertainty. All the data is compared and checked for internal conformity and, if available, conformity with reference measurement from an established traceability chain. The lecture also addressed measurement techniques such as optical microscopy, spectroscopic

scatterometry, spectroscopic ellipsometry and reflectometry, data processing, and measurement uncertainty.



In the picture TC10 meeting participants

Traditionally, we have our [IMEKO TC10 Member's meeting](#) (open for all participants) at the end of the first day, before the conference Gala Dinner.

Among many other interesting conference results is the distribution of papers on scientific topics. We can identify a clear winner: Artificial Intelligence (AI). At the conference, the AI topic was split into two parts: one, where AI was applied in a manufacturing field and two, where AI was utilized in Measurement for Diagnostics, Optimization and Control. Half of the scientific papers presented on the first day addressed the application or development of an artificial intelligence technique. Considering the topics of the second conference day, our traditional fields were addressed in sensors, signal acquisition and processing, Industry 4.0 / 5.0 foundations, applications, trends and novelties, and MACRO meets NANO.



In the picture, Prof. Chao-Ching Ho

As one of the TC10 successes, our new TC members introduce themselves in detail each year at the TC10 Member's meeting. This time, we had two presentations:

Prof. Chao-Ching Ho from the Graduate Institute of Manufacturing Technology, National Taipei University of Technology, Taipei, Taiwan, and Mr Adam Szaller, a researcher at the Research Laboratory on Engineering and Management Intelligence at the Institute for Computer Science and Control (SZTAKI), Budapest, Hungary.



In the picture Mr Ádám Szaller,

Prof. Chao-Ching Ho and Mr Adam Szaller are already known by the TC10 community because of our traditions: TC10 candidates should have at least two papers and presentations at an earlier TC10 conference before applying for membership. Fortunately, our new members typically have much more than this starting requirement.

A really important aspect we think that IMEKO considers is to serve humankind, e.g., with special emphasis on the Sustainable Development Goals (SDGs).

As an entirely novel idea of the IMEKO TC10 2023 conference, authors were asked to address one of the 17 SDG goals among their keywords, mainly served by their research and manuscript. We had interesting results and were ready to specify our contribution to the SDG global goals. Considering the results, it appears almost half of the authors connected their scientific results to the SDG goals.



One may also identify the classical SDG flag on the street of Delft walking to the conference venue.

Thanks to this idea, IMEKO TC10 on Measurement for Diagnostics, Optimization and Control can say that our 2023 conference contributes in majority to the "Industry, Innovation and Infrastructure" SDG goal and additionally to the "Good Health and Well-being", "Sustainable and Resilient Industry" and "Responsible Consumption and Production" SDG goals.

We believe this is a valuable contribution to the IMEKO scientific community and society.

According to our traditions, we have three awards to give away each year. In 2023, the award winners were:

Award for the Best Scientific Paper and Presentation, in recognition of professional excellence, the paper entitled: "Multi-task Learning Based on Deep Convolutional Neural Networks for Surface Defect Detection of Metal Gaskets", authored by Chao-Ching Ho, Chun-Han Liu, Ming-Fu Chen, and Ming-Chieh Kao.



Prof. Chao-Ching Ho received the award from TC10 Chair Dr Zsolt János Viharos



Award for the "Best Scientific Paper and Presentation by a Young Scientist" in recognition of professional excellence, the paper entitled "Dynamic characterization of MEMS-based Inertial Unit under Combined Vibration Stresses" authored by Gabriele Patrizi, Marco Carratù, Lorenzo Ciani, Paolo Sommella, Roberto Singuaroli, Marcantonio Catelani, Antonio Pietrosanto.

Award for the "Best Scientific Paper and Presentation by a Woman" in recognition of professional excellence, the paper "Investigation of Atmospheric Pressure Plasma Treatment on PCB Surface Finishes" authored by Eszter Kocsis, Attila Lukács, István Szalai.



In the picture Eszter Kocsics with TC10 Chair Zsolt János Viharos

In the Closing and Award Ceremony, one of IMEKO TC10's aims was presented again.

IMEKO member organizations come from 41 countries; however, IMEKO TC10 has active members out of 8 of these countries. Consequently, the floor is widely open for new IMEKO TC10 members from those other countries!

The organizers would like to express thanks to the conference sponsors!

Carl Zeiss AG, PI Benelux BV, Centre of Excellence in Production Informatics and Control (EPIC CoE) VSL, the National Metrology Institute of The Netherlands



Let's meet in 2024 at the next IMEKO World Congress in Hamburg, Germany. IMEKO 2024 "Think Metrology"!

Finally, the most important conclusion: Enjoy the scientific life with IMEKO TC10 on Measurement for Diagnostics, Optimization and Control!

Written by TC10 member Dr Lauryna Siaudinyte and TC10 Chair Dr. Zsolt János Viharos

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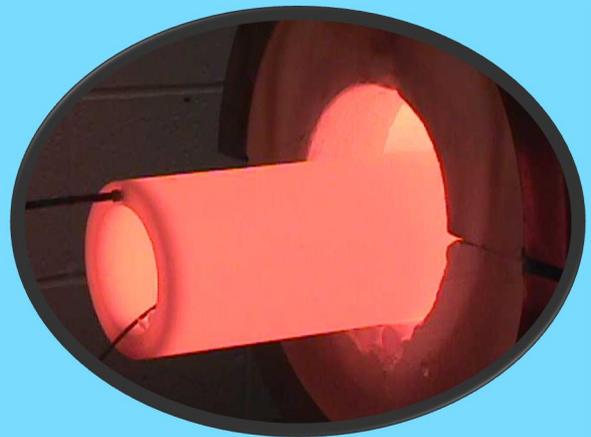
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**INTRODUCING THE NEWEST MEMBER OF THE IMEKO-ELSEVIER FAMILY:
MEASUREMENT ENERGY!**

Elsevier is delighted to announce to the IMEKO community the launch, in January 2024, of a third open access journal related to the original Measurement title. The newest addition is Measurement: Energy, and full details, aims, and scope can be read on its website: [Measurement Energy](#).



Proposed and developed by Editor-in-Chief Yong Yan (Measurement Editor and Professor of Electronic Instrumentation at the University of Kent, United Kingdom), pictured here, the journal will take a multidisciplinary approach to the study of energy from a broad measurement science perspective.

Professor Yong commented that "Measurement: Energy" is a leading scientific publication platform for the international exchange and knowledge transfer of the latest advances in measurement science, metrology, characterization, diagnosis and monitoring of renewable and conventional energy sources and energy systems.

Main topics include the measurement of all electrical, mechanical, chemical and environmental quantities in the generation, conversion, storage, distribution and consumption of energy. Diagnosis and monitoring of fuel cells, combustion systems and pollutant emissions are also encouraged.

Full-length articles, reviews, and short communications are all welcome, and you are encouraged to submit your own work and spread the word widely! Special issue proposals are particularly welcome at this early stage, as we seek to rapidly grow the journal with topical, high quality publications; any ideas can be submitted for consideration by Yong and his new team at this page:

<https://www.elsevier.com/subject/computer-science/special-issue-proposal>

We hope you will find Measurement: Energy a useful and interesting new addition to your reading and show it the support that Measurement, Measurement: Sensors and Measurement: Food already receive! Please look out for launch activities on social media and in upcoming 2024 conferences over the coming months, and in the meantime, do take a moment to browse the homepage for an overview.

ACADEMIA MEETS INDUSTRY

The 26th IMEKO TC4 International Symposium and the 24th International Workshop on ADC and DAC Modelling and Testing (IWADC), themed "Academia meets Industry," were hosted within the international trade show COILTECH in beautiful Italy. The Scientific Conference IMEKO-TC4 occurred on September 20th and 21st at the Exhibition Center in Pordenone, Italy. Notably, this prestigious International Symposium, IMEKO-TC4, was organized for the very first time concurrently with the industry-driven World Magnetic Conference, but separately; both events were hosted at the international trade show COILTECH. The link to the Symposium Website: [Academia Meets Industry](#)



The main objective of the IMEKO-TC4 symposium was to foster collaboration between academic researchers and industry engineers, with a specific focus on promoting innovation. This event aimed to bring together experts and researchers from diverse communities engaged in measurements, sensors, and related fields, creating an environment that facilitates the exchange of scientific knowledge and ideas. IMEKO TC4's primary interest lies in the theoretical and practical aspects of measuring electrical quantities through electronic instruments. The organization provides a forum for the dissemination of ideas about electrical and electronic measuring techniques, as well as the principles of implementing information and communication technology for measurement and accuracy enhancement.



The conference commenced with an elegant evening of networking at the IMEKO TC4 Gala Dinner, held at the renowned Villa Gozzi on the 19th of September, 2023. Villa Gozzi holds a distinguished reputation as one of the most notable Venetian residences in the Pordenone area, particularly associated with the Gozzi brothers, prominent 18th-century Venetian writers. It became a vibrant centre for cultural exchanges and gatherings, hosting literary salons and delightful strolls, warmly welcoming guests from Venice and beyond.



Following this exquisite evening, the Scientific Conference IMEKO TC4 occurred on September 20th and 21st at the Exhibition Center in Pordenone, Italy. The symposium received and peer-reviewed 59 papers from all over the world, and 48 of them have been accepted for either oral or poster presentation.

Notably, 20% of the accepted papers were from Industry. The link to the Conference Proceedings: [Proceedings2023 IMEKO TC4.pdf](#)



Best Paper Awards were announced for the most outstanding paper, the best paper presented by a young researcher, the best poster presentation, and the best paper presented by a woman.

We had 50 people attending the conference on-site. There were 5 Keynotes, 4 special sessions, and other interesting sessions that filled up two days of insightful presentations, inspiring discussions, and enjoyable networking.



Furthermore, in collaboration with COILTECH and the UK Magnetics Society, some IMEKO conference proceedings were live-streamed to an engaged online audience, with 40 additional online registrations. To provide you with a glimpse of the conference, kindly view the video available on [YouTube](#).

With our firm wish to bring together academic researchers and industrial engineers in our TC4 symposium "Academia Meets Industry," we aim to encourage innovation by combining the strengths of these two dynamic groups. To give the online audience a sense of the industrial surroundings of Coiltech, filled with exhibitors eager to unveil their latest advancements, we produced a movie featuring three companies participating and showcasing their latest high-tech advancements. [Link to the movie](#)



We were delighted to welcome a very special online guest during our symposium, Prof. Frank Härtig, the President of IMEKO and Vice-President of PTB Germany. We greatly appreciated Prof. Härtig's greeting words and his thanks to the Symposium Chairs.

We hope that our intention to create a nexus, bridging experts and visionaries from diverse communities immersed in measurements, sensors, and their interconnected fields, could be fulfilled with the IMEKO TC4 Symposium 2023.

On behalf of the Organizing Committee, we extend our appreciation to the authors for submitting their papers and sharing their scientific findings with the IMEKO TC4 community. Furthermore, we would like to take this opportunity to express our gratitude to all the members of the Technical Program Committee, the Special Session

Organizers and anonymous reviewers whose contributions have made this outstanding program possible. Special thanks are due to all the local Organizing Committee members, whose significant efforts were devoted to the successful organization of this event.

We thank all our sponsors, including CRRC China, Measurement International Canada, UK Magnetics Society, SENIS Group Switzerland, and in particular, we extend our heartfelt appreciation to our main sponsor, COILTECH, for their generous support and unwavering enthusiasm, which made this event possible.



Written by Dr Dragana Popovic Renella, COO of SENIS Group, Switzerland and Symposium Chair of IMEKO-TC4 2023

EDITORIAL CHANGES FOR MEASUREMENT FOOD

Since being accepted for indexing by Scopus in June 2023, IMEKO journal Measurement: Food, closely aligned with TC23 (Metrology in Food and Nutrition), has seen an explosion in growth, with huge new interest in submission from authors globally.



We are therefore delighted to announce that the Chair of TC23, Joris Van Loco, of Sciensano, Belgium, is joining current Editor-in-Chief Antje Hebestreit as the new Co-E-i-C from January 2024.

A very warm welcome to him - we look forward to working together for the continued growth and development of the journal in the years ahead!

Written by Kay Tancock, Senior Publisher Elsevier

Joris Van Loco graduated as an engineer in chemistry and agricultural industries with a postgraduate degree in quality assurance. Scientific Director of the Chemical and Physical Health Risks department in SCIENSANO (Belgium).

He is involved in (dietary) exposure assessment and lab analysis of contaminants and additives in food, consumer goods, human samples,... with the aim to perform risk and health impact evaluation of chemicals.

He is the author of more than 100 scientific papers in this field. Member of the Superior Health Council workgroup Nutrition, Member of the administrative board of Nubel, Chair of TC23 Metrology in food and nutrition of IMEKO, Member of Flemish Food Chemistry Society and representative for Belgium at EUCHEMS Food Chemistry division. Invited lecturer at the KULeuven and ULiege.

Written by Joris Van Loco

METROARCHEO 2023

Following the positive experience of the past editions held in Benevento (2015), Turin (2016), Lecce (2017), Cassino (2018), Florence (2019), Trento - virtual way (2020), Milan (2021) and Cosenza (2022), the ninth edition of TC4 Conference on Metrology for Archaeology and Cultural Heritage MetroArcheo 2023 has been organized in Rome, Italy.

The city, with its vast artistic and archaeological heritage spanning thirty centuries of history, is home to research centres whose researchers have learned to approach the study of cultural heritage with a multidisciplinary approach and represented a perfect framework for this conference.

Knowledge of tangible cultural heritage is deepened through the study of execution techniques, materials used and their state of conservation. The use of highly accurate measuring methods based on chemical, physical, biological and mechanical techniques, performed ad to the characterization of materials and to the suggest of conservation and valorization activities which are, in turn, safe for the work under investigation. Nowadays, the advent of new digital technologies and information technology are opening new frontiers for science with very interesting new implications in the metrology applications for heritage science.

MetroArcheo 2023, organized by Roma Tre University and the Institute of Heritage Science of the National Research Council of Italy, has been conceived as a meeting place aimed both at promoting interdisciplinary works between researchers belonging to different scientific sectors and at showing and sharing the latest innovations in the field of measurements applied to cultural heritage. MetroArcheo2023 has also been an opportunity for intersectoral exchange between researchers and professionals

coming from public structures such as museums, galleries, libraries, archives and small and medium-sized enterprises

The Roma Tre University, with its three Departments active in the cultural heritage sector (Science, Mathematics and Physics, Industrial Engineering, Electronics and Mechanics), has been the headquarters of MetroArcheo 2023. The Congress then has the fundamental support of important Roman and Latium cultural institutions such as the Colosseum Archaeological Park, the National Etruscan Museum of Villa Giulia, the Vulci Foundation, the National Roman Museum, Palazzo Altemps and the École Française de Rome.

Original and inspiring welcome ceremony

The conference kicked off with an original and inspiring welcome ceremony, which, after the greetings of the Local Authorities and Institution Chairs, saw the sequence of the three plenary sessions, which represented the multidisciplinary soul of the Congress.

The first keynote was presented by Prof. Yong-jae Chung of Korea National University of Cultural Heritage and a member of ICCROM for Korea with a speech on the efforts to protect the cultural heritage from biological degradation.

The second keynote has been presented by Prof. Haida Liang of Nottingham Trent University with a talk on ground-based remote imaging and sensing for cultural heritage.

The third was presented by Prof. Andrea Babbi of the Institute of Heritage Science of the National Research Council of Italy (ISPC-CNR) with a talk on the holistic perception of antiquity thanks to transdisciplinary scientific networks.

All the talks have shown how the measuristic approach is widely spread and validly used within different disciplines.

Technical Sessions



The big requests for Special Sessions and the idea to favour the exchanges between researchers convinced the organizers to group the special sessions into seven thematic scientific tracks called Digital, Diagnostic, Materials, Sensors, Historical Gardens, Underwater and Geomatics over the General Session in which the metrological issues have been widely discussed. The level of engagement and enthusiasm in these sessions was really impressive, obliging the speakers to extend the discussions during the breaks.

During the two days devoted to the oral sessions, lunch breaks featured poster presentations, ensuring ample opportunities for discussions and networking.

Social Events



The Cloister of the Basilica of San Paolo Fuori le Mura.

Considering the special nature of the Congress and the topics covered by it, for the social events, we wanted to offer participants not a classic dinner in a restaurant but an experiential journey, immersing them in the atmosphere of the eternal city. The welcome party was held in the ancient cloister of the Basilica of San Paolo Fuori le Mura, where participants could observe archaeological finds from ancient Rome close to medieval and nineteenth-century architectural contexts.



Domitian Stadium under the Piazza Navona

The gala dinner was offered in the ancient Domitian Stadium, about 5 meters below street level and under the beautiful setting of Piazza Navona. The event was enriched by the guided tour, which interspersed the aperitif with dinner.

Awards

As usual, the conference includes the presentation of awards for the best works. It should be underlined that, apart from the best poster, which was voted by the congressmen, the others were chosen by the organizing committee after an exhausting and very complicated selection process: exhausting due to the large number

of articles to be examined were very complicated due to the many disciplines which inspired the papers. The choice has been driven by the idea of award papers with a robust metrological background. Five awards were presented:

1) The best paper presented during Special Session: "Multiscale and Multitemporal High-Resolution Remote Sensing and Non-destructive Testing for Archaeology and Monumental Heritage: From Research to Preservation", and the winner was Chiara Torre for the paper "Geophysical Investigation at "Villa del Casale" Piazza Armerina (EN)" authored by "Isabella Baldini (Università di Bologna), Carla Sfameni (ISPC-CNR), Lara De Giorgi (ISPC-CNR), Ivan Ferrari (ISPC-CNR), Francesco Giuri (ISPC-CNR), Chiara Torre (Università di Catania) and Giovanni Leucci (ISPC-CNR)," award received by Chiara Torre.

2) Best Poster won by the paper titled "Wireless Sensing of Permittivity for Cultural Heritage Monitoring Using a Passive SRR," authored by Erika Pittella (Sapienza University of Rome), Andrea Cataldo (University of Salento), Marta Cavagnaro (Sapienza University of Rome), Livio D'Alvia (Sapienza University of Rome), Francesco Fabbrocino (Pegaso University) and Emanuele Piuze (Sapienza University of Rome)," award received by Livio D'Alvia.

3) Best Paper Presented by a Woman won by Ada Saez for the paper titled "Decay Assessment Approach of Building Stones from Cultural Heritage in Freshwater Reservoirs" authored by "Ada Saez, Natalia Perez-Ema and Monica Alvarez de Buergo (Instituto de Geociencias - CSIC Spanish Research Council and UCM Complutense University of Madrid)."

4) Best Paper Presented by a Young Researcher won by Giulia Boccacci for the paper titled "Indoor Climate Characterisation of the Quarantine Room of NTNU University Library" authored by "Giulia Boccacci (Sapienza University of Rome), Francesca Frasca (Sapienza University of Rome), Chiara Bertolin

(Norwegian University of Science and Technology), Claudio Chimenti (Sapienza University of Rome), Erlend Lund (NTNU University Library), Tonje Dahlin Sæter (NTNU University Library) and Anna Maria Siani (Sapienza University of Rome)."

5) Best Conference Paper won by the paper titled "Quantitative Criteria to Configure and Characterise Portable X-Ray Fluorescence Spectrometers" authored by "Eleni Konstantakopoulou (Polytechnic School, Aristotle University of Thessaloniki), Annalaura Casanova Municchia (Consiglio Nazionale delle Ricerche Istituto di Scienze del Patrimonio Culturale), Roberto Ferretti (Roma Tre University), Simone Porcinai (Ministero della Cultura Opificio delle Pietre Dure) and Marco Ferretti (Consiglio Nazionale delle Ricerche Istituto di Scienze del Patrimonio Culturale).



The award was received by Eleni Konstantakopoulou and Annalaura Casanova Municchia.

Metrics

More than 180 participants from 33 countries representatives of the 5 continents, 30 sessions subdivided into 7 thematic scientific tracks, 230 presentations subdivided between orals and posters.

Concluding remarks

Beyond the numbers, which surely fix the success of the Congress, many things as General Chair pleased me:

1) see the well-attended opening and closing sessions;

2) the large participation of young people, a sign that the topics stimulate their interest;

3) classrooms, even very roomy, full during some sessions;

4) positive comments on the organization in all its aspects (venues, catering, social events, invited speakers, etc.).

We also take this opportunity to thank the sponsors Se.Te.L. s.r.l. and DefTech s.r.l. Fonds to both Italians for supporting our conference activity, the Tutorial presentation performed by Maurizio Gabriele Porcu of CODEVINTEC, and IMEKO for providing a global platform for researchers and metrology associates to work on solutions directly benefiting society and cultural heritage in particular.

Satisfied with the work carried out and aware of the efforts made to organize this event, we leave the baton to the Department of Geosciences of the University of Malta, to whom we wish the best wishes for an even more effective organization which further improves the possibilities of cultural exchange between researchers and between the different approaches and disciplines of which they are bearers.

Fabio Leccese, General Chair of 2023 IMEKO International Conference on Metrology for Archaeology and Cultural Heritage - MetroArchaeo 2023



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