



IMEKO

International Measurement Confederation

Measurement for Diagnostics, Optimization and Control

Technical
Committee
TC10



SZTAKI

19th IMEKO TC10 Conference

“MACRO meets NANO in Measurement for Diagnostics, Optimization and Control”

Delft, The Netherlands on September 21-22, 2023

TC10 (Open) Members Meeting, 2023.09.21, 15:50 - 17:00

Dr. Zsolt János VIHAROS

Senior research fellow, Institute for Computer Science and Control

Vice Dean for Science of the John von Neumann University

President of the Hungarian Member Organisation (MO) of IMEKO

Chairperson, IMEKO TC10 on Measurement for Diagnostics, Optimization and Control

Participants (41)

Q Search

LY	🔄 Liyue Yan	📷	🔗	📷	🔗
LC	🔄 Loredana Cristaldi	📷	🔗	📷	🔗
LC	🔄 LORENZO CIANI	📷	🔗	📷	🔗
LM	🔄 Luis Filipe Lages Martins		🔗		🔗
LK	🔄 Lukluk Khairiyati		🔗		🔗
MC	📷 Marco Carratù	📷	🔗	📷	🔗
MJ	🔄 Marija Jadrušić		🔗		🔗
MF	🔄 Mariusz Farys		🔗		🔗
MB	🔄 Michal Bartys	📷	🔗		🔗
M	🔄 Mladen	📷			
MS	🔄 Mohamad Syahadi		🔗		🔗
OC	🔄 Olga Cataraga	📷	🔗	📷	🔗
PM	🔄 Paolo Moscatti	📷	🔗		



Participants (9)

Find a participant

- Zsolt János Viharos (Co-host, Me)
- Admin (Host)
- Yukio Hiranaka
- piotr.bilski
- Marco Carratù
- balazs.scherer
- giulio d'emilia
- Lorenzo Ciani
- NICK, Gabor

2021

Admin



Mute

Invite

Mute All

More

**IMEKO**

International Measurement Confederation

Measurement for Diagnostics, Optimization and Control

Tc10

TC10 Members meeting, 2022.09.26, 17:20-18:20 CET

“Measurement for Diagnostics, Optimisation and
Control to Support Sustainability and Resilience”
Warsaw, Poland, 26th - 27th of September

Dr. Zsolt János VIHAROS

Senior research fellow, Institute for Computer Science and Control

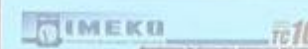
President of the Hungarian Member Organisation of IMEKO

Member of the IMEKO Supervisory Board

Chairperson, IMEKO TC10 “Measurement for Diagnostics,
Optimization and Control”

18th IMEKO TC10 Conference
Measurement for Diagnostics, Optimization and Control

Warsaw, Poland, September 26-27, 2022



International Measurement Confederation

Measurement for Diagnostics, Optimization and Control

TC10

18th IMEKO TC10 Conference

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Measurement for Diagnostics, Optimization and Control

Warsaw, Poland, September 26-27, 2022

TC10

2022

CENTRE OF EXCELLENCE

EPIC

Production Informatics and Control

This project has received funding from the

European Union's Horizon 2020 research A

and innovation programme under grant

agreement No 731912

2023.09.21, Delft, The Netherlands, IMEKO TC10 Meeting



Founded: 1958

2nd IMEKO World Congress



Budapest, Hungary, 1961



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



Presentation of new members

Membership changes - New Member candidates or members since the last GC

Name	Affiliation with address	Email	
Prof. Chao-Ching Ho	National Taipei University of Technology, Graduate Institute of Manufacturing Technology and Department of Mechanical Engineering, No. 1號, Section 3, Zhongxiao E Rd, Da'an District, Taipei City, Taiwan 10608	hochao@mail.ntut.edu.tw	
Ádám Szaller	Institute for Computer Science and Control, H1111, Budapest, Hungary, Kende u. 13-17.	szaller.adam@sztaki.hu	

New Member Introduction

Chao-Ching Ho




Graduate Institute of Manufacturing Technology
National Taipei University of Technology, Taipei, Taiwan

國立臺北科技大學 製造科技研究所暨自動化研究所暨機械工程系

HoChao@ntut.edu.tw



Founded in 1912



Students: 13,852
International students: 1,085




Located in
Taipei,
Taiwan



International students across
61 countries
Partner Universities : 360

Campus size



495 Acres



Faculty & Staff
1,754



6
Colleges

19 Departments
33 Master programs
20 PhD programs

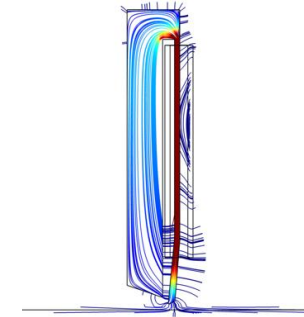
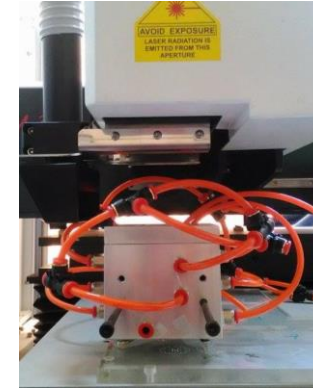
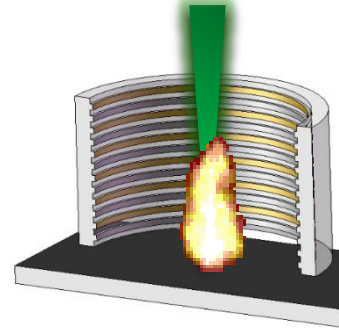
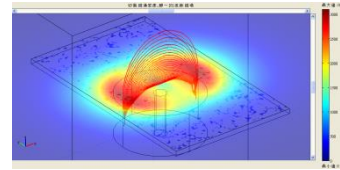
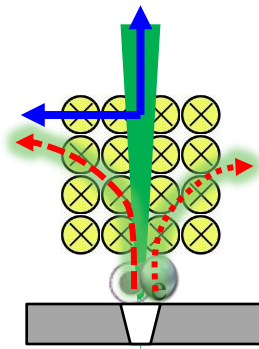
The 20th International Conference on Automation Technology

DEC 8-10, 2023

National Taipei University of Technology (NTUT), Taipei, Taiwan



In-Situ Monitoring and Prognostics



Vision assist.

Straight Gas Jet

Swirling Gas Jet

Ring Shape Electrode

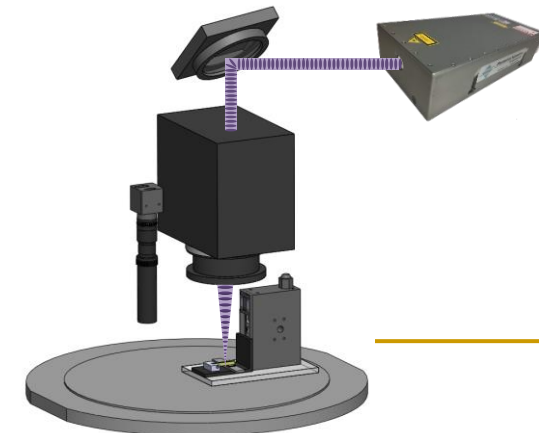
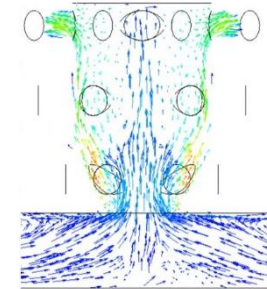
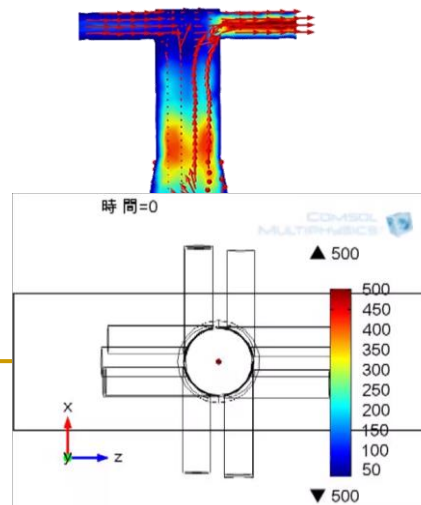
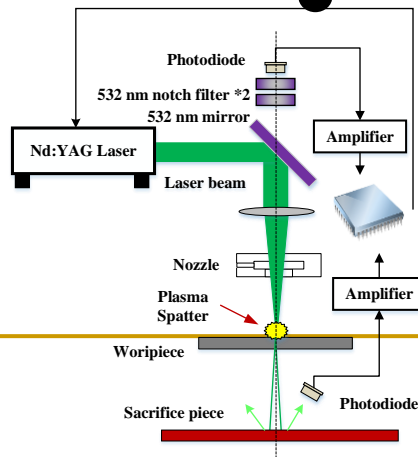
Magnetic assist.

Magnetic assist.

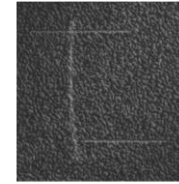
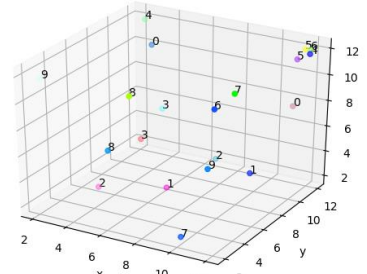
Electric Field assist.

Controllable Swirling Gas Jet

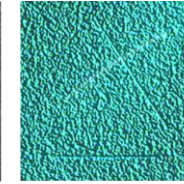
Diamond Electroplating Wire



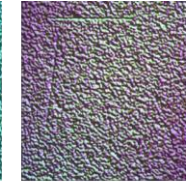
Surface defects inspection



L1(3, 3, 8)=[69, 69, 69]
L2(5, 3, 5)=[135, 135, 135]



L1(2, 2, 5)=[84, 237, 206]
L2(7, 8, 9)=[92, 222, 210]

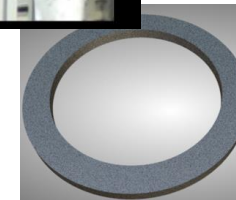
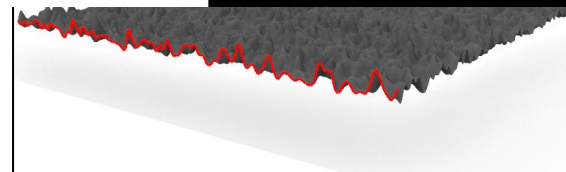
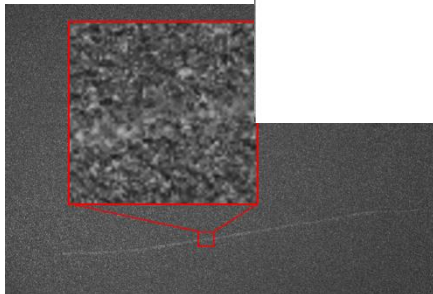


L1(2, 3, 3)=[13, 188, 38]
L2(7, 7, 6)=[188, 69, 199]

Defect
Defect Ge

Defect Detection Sys
Consumer Electronic

Data Generation for Defect
of Titanium Spacer

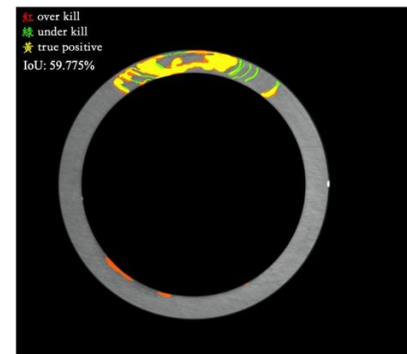




Fabric Defects



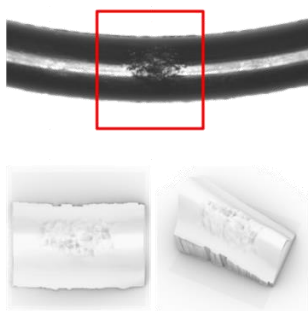
Plastic Surface



Metal Gaskets



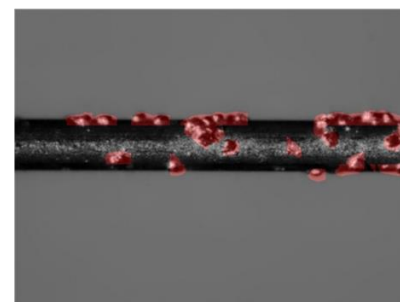
Wafer Jigs Defects



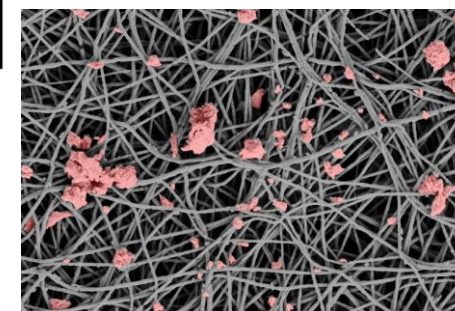
Rubber Defects



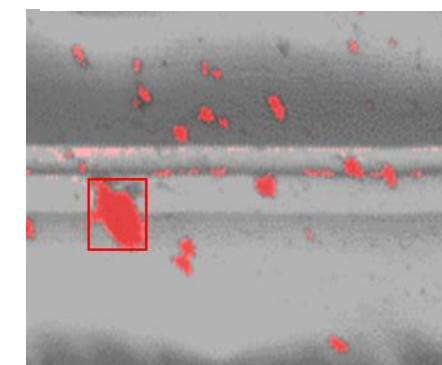
Heterogeneous Defects



Diamond cuts



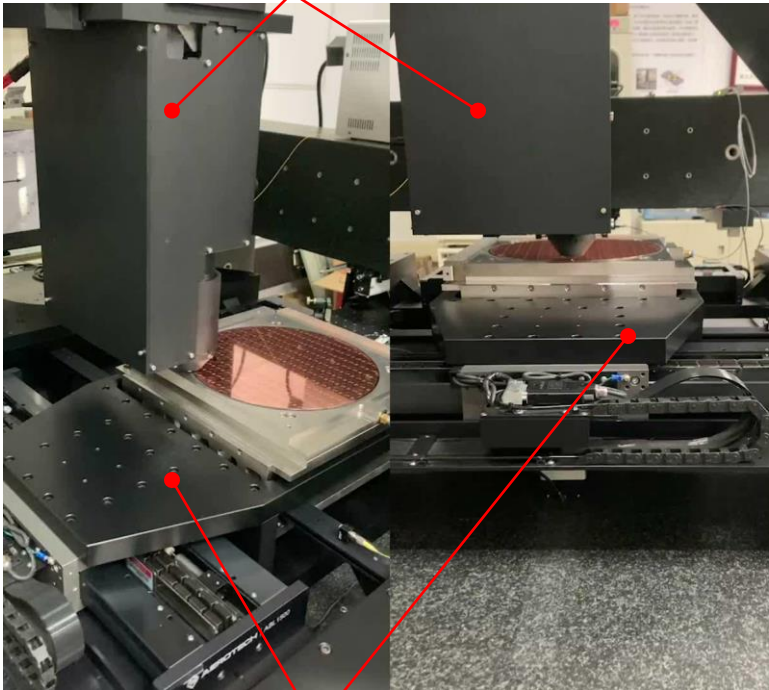
Nanofibers Defects



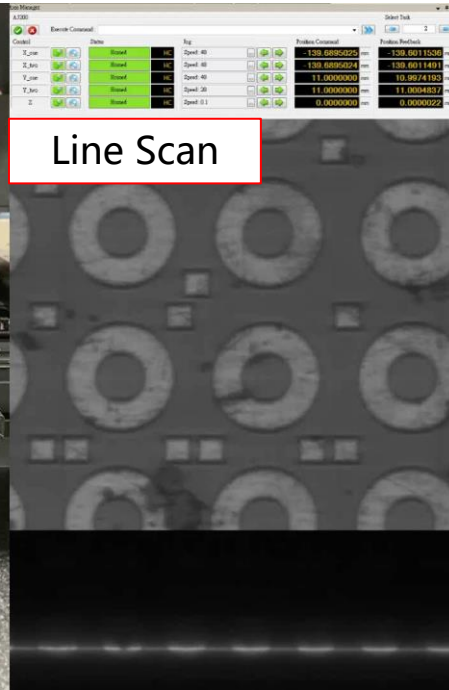
LCD panel cutting

In-line platform for advanced semiconductor packaging

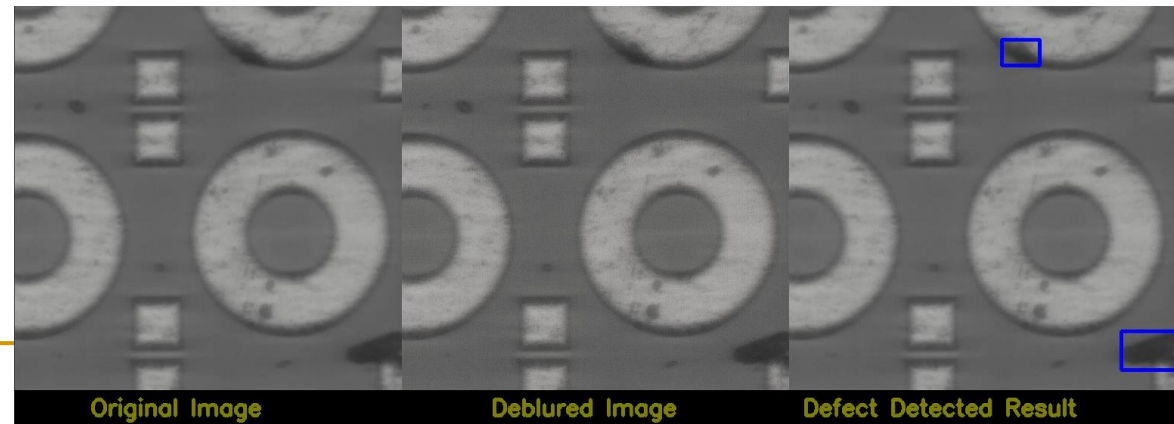
color confocal probe



Line Scan



Abbe-Free Wafer Platform



Original Image

Deblurred Image

Defect Detected Result



Thanks for your attention
Q & A

IMEKO TC10 meeting

Introduction

Adam Szaller

Institute for Computer Science and Control (SZTAKI)

Research Laboratory on Engineering & Management Intelligence

Background I.

MSc in Mechatronics Engineering – Budapest University of Technology and Economics

PhD in progress – defense in 2023 Oct-Nov.

- Topic: resource sharing in distributed production systems
- Platform-based resource sharing mechanism
- Trust model for manufacturing companies to rate each other's performance
- Financial model for platform-based resource sharing

Publication activity

- Number of publications: 26
- 3 article in IF journals, 2xQ1, 1xD1
- Number of citations: 186 based on Google Scholar

Experience in industry

- Simulation of production and logistics systems since 2015
- Industry 4.0 readiness and digitalization level assessment projects, research
- Continuously working on industrial projects (e.g. Bosch, Western Digital, Hilti, Apollo Tyres, etc.)

Background II.

Additional information

- Active participation in HORIZON EU proposals
- Good relationship, common research with Fraunhofer Austria, IPA (Stuttgart), IPT (Aachen) and IPK (Berlin)

Publications in IMEKO conferences

1. Nick, G., Gallina, V., **Szaller, Á.**, Várgedő, T., Schumacher, A. *Industry 4.0 in Germany, Austria and Hungary: interpretation, strategies and readiness models*. 16th IMEKO TC10 Conference Testing, Diagnostics and Inspection as a comprehensive value chain for Quality and Safety, Berlin, Germany (2019) pp. 71-76.
2. Nick, G., **Szaller, Á.**, Viharos, Zs. J., Várgedő, T., Bányai, D., Fries, C., Fechter, M. *Intelligent Production of The Future – First Results of A Survey*. 17th IMEKO TC 10 and EUROLAB Virtual Conference: Global Trends in Testing, Diagnostics & Inspection for 2030, Zagreb, Croatia (2020) pp. 402-407.
3. Gallina, V., Viharos, Z. J., Nick, G., Frye, M., Kluth, A., **Szaller, Á.**, Schmitt, R. H. *Factory of the Year Prize–A Benchmarking*. 18th IMEKO TC10 Conference 2022 : Measurement for Diagnostics, Optimisation and Control to Support Sustainability and Resilience, Warsaw, Poland (2022) pp. 32-37.
4. Fükő, L., **Szaller, Á.**, Colangelo, E., Nick, G., Kádár, B. Flexible Manufacturing Concept at Bosch: A low-cost implementation of an Industry 4.0 concept. 19th IMEKO TC10 Conference on MACRO meets NANO in Measurement for Diagnostics, Optimization and Control (will be presented tomorrow)

Future plans & Others

Continue working on the following topics

- Platform-based manufacturing
- Sustainability, circularity
- Digitalization in industry

Participation in IMEKO TC10

- Participation in conferences, at least one paper/conference
- Distribution of call for papers, motivating younger colleagues to submit a contribution
- Trying to involve new members through research institute and university contacts

Free time activities

- Fishing, gardening, cycling, hiking, traveling
- Animals: 4 degus + 1 rabbit
- Cooking: any kind of food & palinka, too 😊



Thank you for your attention!

Let's talk at the Gala Dinner 😊



You are here: [IMEKO](#) ▶ TC10

TC10

- About
- Aims
- Members
- Events
- Documents
- Links
- Contact
- Log in / Log out

TC10 - Measurement for Diagnostics, Optimization & Control

Call for Papers

The IMEKO TC10 - Measurement for Diagnostics, Optimization & Control

invites you to attend our next annual conference:

IMEKO TC10 Conference on

MACRO meets NANO

in Measurement for Diagnostics, Optimization and Control

on September 21-22, 2023

in Delft, The Netherlands

For further details, please, visit: <https://www.imekotc10-2023.sztaki.hu/>

Important dates:

Extended abstract submission new deadline: 18 June 2023

Notification of authors of paper acceptance June 30, 2023

Early registration deadline July 15, 2023

Deadline for camera-ready papers August 30, 2023

Beginning of the event: September 21, 2023

The history of IMEKO TC10 - Measurement for Diagnostics, Optimization & Control is represented under [Events](#).



IMEKO 2024 XXIV World Congress

26–29 August 2024 | Hamburg, Germany



[Home](#) [Venue](#) [Program](#) [Paper Submission](#) [Registration & Fees](#) [Exhibitors & Donors](#) [Organization](#) [FAQ](#)



IMEKO 2024 Welcome Video

[Registration](#)

[Paper Submission](#)



Moin! and Welcome to the XXIV IMEKO World Congress!
Welcome to Hamburg, Germany!

As the Chairman of the IMEKO XXIV World Congress it is a great honor and privilege to welcome you to Hamburg, cosmopolitan city in the north of Germany.

Under the headline **Think Metrology**, we will shed light on both well-established and new, highly current topics such as digitalization.

Hamburg has been a gateway from Germany and Europe to the rest of the world for over 1400 years. Over the centuries, trade and innovation have been instrumental in the growth and development of the city, now the second largest in Germany. This and over 20,000 researchers and university students at numerous



IMEKO 2024 XXIV World Congress

26–29 August 2024 | Hamburg, Germany



[Home](#) [Venue](#) [Program](#) [Paper Submission](#) [Registration & Fees](#) [Exhibitors & Donors](#) [Organization](#) [FAQ](#)

Registration fees (tentative)

	Participant	Student ¹	Accompanying Person	On-Site
Welcome Reception	✓	✓	✓	—
Conference Sessions	✓	✓	—	✓
Technical Visits in Hamburg	✓	✓	—	—
Technical Visit PTB	✓	✓	✓	— 3
Conference Catering	✓	✓	✓	✓
Lunch	✓	— 2	✓	✓
Gala Dinner	— 4	— 4	— 4	—
Social Events	✓	✓	✓	✓
Congress Kit	✓	✓	—	—
Early Bird (Available until 15.06.2024)	890 €	490 €	490 €	—
Regular	1.100 €	650 €		1.100 €
	Registration	Registration	Registration	

Dear TC Chairs and Secretaries,

We hope this message finds you in good health. As we approach the **upcoming XXIV World Congress**, we are excited to invite your assistance in shaping the technical program. Your expertise is invaluable in creating a diverse and up-to-date program.

We kindly ask you to take a moment for the following steps:

1. **Define TC Competencies:** Your insightful comprehension is pivotal in outlining the core areas of expertise within your Technical Committees (TCs).

These competencies are closely related to the objectives of the TC and may be **the subject of technical sessions during the Congress**.

2. **Request Support from Members:** As TC Chairs, you have the distinct opportunity to encourage your **TC members to actively participate in the review process**.

All members who agree to support the review should - if they are not already registered - **register on our INDICO conference portal at <https://conferences.imeko.org/register/>**.

3. **Collect Members' Competencies:** The diverse skills of your TC members play a crucial role in the success of the technical program. We seek your assistance in gathering these proficiencies, which will guide the selection of reviewers.

For your convenience, **we have prepared an Excel file to assist you in these steps**. You should have received this file four weeks ago. Please adjust where needed by adding the defined areas of expertise and the feedback received from the members.

Kindly complete the file possibly by **October 1, 2023**, and return it to us. The provided information will seamlessly integrate into the INDICO conference management system and serve as the foundation for paper reviewer selection.

Your active engagement is key to the success of the IMEKO 2024.

If you have any questions or would like to share suggestions, please don't hesitate to contact us. We are here to assist.

Thank you very much and kind regards,

Dr. Dirk Röske

Realization of Force

Dr. Maria Brodel

Explosion Protection

Bundesallee 100 | 38116 Braunschweig | Germany



Congresses)

IMEKO TC10 Events

Name	Year	Place	Country
TC10 Conference 2022	2022	Warsaw	POLAND
TC10 Conference 2020 (ONLINE)	2020	Dubrovnik	CROATIA
TC10 Conference 2019	2019	Berlin	GERMANY
TC10 Workshop on Technical Diagnostics 2017	2017	Budapest	HUNGARY
TC10 Workshop on Technical Diagnostics 2016	2016	Milano	ITALY
TC10 Workshop on Technical Diagnostics 2014	2014	Warsaw	POLAND
TC10 Workshop 2013	2013	Florence	ITALY
TC10 Workshop 2010	2010	Krakow	POLAND
TC10 International Workshop on Technical Diagnostics 2008	2008	Budapest	HUNGARY
TC10 Conference 2005	2005	Budapest	HUNGARY
TC10 Symposium 2001	2001	Compiègne	FRANCE
TC10 Symposium 1999	1999	Wroclaw	POLAND
TC10 Workshop 1995	1995	Trondheim	NORWAY
TC10 Symposium 1992	1992	Dresden	GERMANY
TC10 Workshop 1991	1991	Warsaw	POLAND
TC10 Symposium 1990	1990	Helsinki	FINLAND
TC10 Conference 1989	1989	Prague	CZECHOSLOVAKIA
TC10 Workshop 1988	1988	Budapest	HUNGARY
TC10 Conference 1987	1987	Paderborn	F. R. GERMANY
TC10 Conference 1986	1986	Dubrovnik	YUGOSLAVIA
TC10 Conference 1981	1981	London	UNITED KINGDOM
2-day Meeting of TC10 1980	1980	Nienwagen	THE NETHERLANDS
TC10 Conference 1979	1979	Karlovy Vary	CZECHOSLOVAKIA

IMEKO World Congresses

I IMEKO World Congress	1958	Budapest	HUNGARY
II IMEKO World Congress	1961	Budapest	HUNGARY
III IMEKO World Congress	1964	Stockholm	SWEDEN
IV IMEKO World Congress	1967	Warsaw	POLAND
V IMEKO World Congress	1970	Versailles	FRANCE
VI IMEKO World Congress	1973	Dresden	GERMAN D. R.
VII IMEKO World Congress	1976	London	UNITED KINGDOM
VIII IMEKO World Congress	1979	Moscow	SOVIET UNION
IX IMEKO World Congress	1982	Berlin (West)	F. R. GERMANY
X IMEKO World Congress	1985	Prague	CZECHOSLOVAKIA
XI IMEKO World Congress	1988	Houston/Texas	USA
XII IMEKO World Congress	1991	Beijing	P. R. CHINA
XIII IMEKO World Congress	1994	Torino	ITALY
XIV IMEKO World Congress	1997	Tampere	FINLAND
XV IMEKO World Congress	1999	Osaka	JAPAN
XVI IMEKO World Congress	2000	Vienna	AUSTRIA
XVII IMEKO World Congress	2003	Dubrovnik	CROATIA
XVIII IMEKO World Congress	2006	Rio de Janeiro	BRAZIL
XIX IMEKO World Congress	2009	Lisbon	PORTUGAL
XX IMEKO World Congress	2012	Busan	REPUBLIC of KOREA
XXI IMEKO World Congress	2015	Prague	CZECH REPUBLIC
XXII IMEKO World Congress	2018	Belfast	UNITED KINGDOM
XXIII IMEKO World Congress	2021	Yokohama	JAPAN
XXIV IMEKO World Congress	2024	Hamburg	GERMANY

Where to organize our conference in 2025?! (and 2026?!)

...it will be the 20th TC10 conference in 2025!...

Events

Events	Date, Place	Event name	Comment
Past event	Yokohama, JAPAN;	XXIII IMEKO World Congress, 2021	
	30 August - 03 September 2021		
Past event	Warsaw, POLAND; 26 - 27 September 2022	18th IMEKO TC10 Conference "Measurement for Diagnostics, Optimisation and Control to Support Sustainability and Resilience", 2022	
Present event	Delft, The Netherlands; September 21-22, 2023	19th IMEKO TC10 Conference: "MACRO meets NANO in Measurement for Diagnostics, Optimization and Control", 2023	
Future event	Hamburg, Germany; 26–29 August 2024	24th IMEKO World Congress, 2024	
Future event	2025	20th IMEKO TC10 Conference (Germany?)	Under organization – 20 th conference of IMEKO TC10!
Future event	2026	21th IMEKO TC10 Conference	Under organization
Future event			

Key helps in TC10 conference organisation

- Venue – The best: 0 cost venue (e.g. University Senat Room, Institute main room...)
 - Because it is FIX cost
 - ...eliminate all fix costs (e.g. website)
 - **OTHER COST CAN BE PROPORTIONAL TO THE NUMBER OF PARTICIPANTS**
 - **IMEKO SERVES WITH A SOPHISTICATED TEMPLATE FOR COST and INCOME PLANNING**
- Participants
 - It is beneficial when the the hosting country „brings” ~50% of the participants to the conference
- IMEKO cost - Really low
- Inflation - Participation fee increasing
- Sponsors - There are very nice sponsors – let’s manage to invite them
- Keynote speakers - Hosting organiser has projects, contacts, etc...
- The new conference system is not so good
 - Almost no support is ensured – it has to be solved centrally



IMEKO Guide for Organisers of TC Events



8th EDITION, IMEKO 2022

Preamble	
Summary of the vital mandatory rules	
Introduction	
1 IMEKO Scientific Events and Publications	
1.1 Types of Events:	
1.2 Roles	
The event organiser	
The Organising Committee (OC)	
The International Program Committee (IPC)	
Editor of Publications from the Event	
Session Chairpersons	
1.3 Publications	
2 Early preparations for an IMEKO event	
2.1 The initiative, Budget and Application	
2.2 Preparation for the event	
2.2.1 The TC at least four months before the event	10
2.2.2 The Organizer at least four months before the event	10
2.3 Drafting the Programme	10
2.4 Call for Papers (CfP)	10
2.4.2 Publicising the CfP	11
2.4.3 Press Releases and IMEKO Secretariat	12
3 Organisation of an Event	12
3.1 Paper Selection and Technical Programme	12
3.2 Second Circular and Preliminary Programme (SCPP)	13
3.3 Final Programme	13
3.4 Checklists for the Event	13
4 Report and financial contribution	15
5 Timetable for the organisation	15
6 Annexes	17
Application for the organisation of an IMEKO Event	17
Application for co-sponsorship by IMEKO	17
Contract agreement	17
Outline budget and financial plan	17
Report on the organisation of an IMEKO Event	17
Suggestion for aspect for the evaluation of the abstracts	18
Reviewer's sample summary sheet	19
Individual evaluation sheet	20
International Program Committee Abstract Review	20
Acceptance Letter	21
Copyright Agreement	23
Rejection Letter	24
Sample Registration Form	25
Instructions for Session Chairpersons	26
Recommendation for publication in the proceedings	27
Recommendation for publication in "Measurement" or in "ACTA IMEKO" or other IMEKO journals	28
How to Prepare a Poster	29
Sample letter asking for manuscript revision	32
Rules and Principles for IMEKO co-sponsorship	33

Revision of tasks and responsibilities of the TB

Tasks & responsibilities of the TB – revised structure

AFTER

8.1. The Technical Board (TB) shall be responsible for:

- 8.1.1 examining proposals for establishing new Technical Committees (TCs)
 - 8.1.2 proposing the formation of new TCs to the GC
 - 8.1.3 the coordination of TC activities
 - 8.1.4 supporting the Editorial Boards of IMEKO Journals
 - 8.1.5 assisting Technical Sessions and Round Tables,
especially at IMEKO World Congresses
 - 8.1.6 monitoring of TC activities
 - 8.1.7 evaluation of the TCs
 - 8.1.8 recommendation on revitalisation or termination of TCs
 - 8.1.9 delivering recommendations for the decision of the General Council on events to be organized or TC officers
- Establishing new TCs
- Support/
Organization of TCs
- Evaluation of TCs
- GC Report

Suggestion

- **IMEKO TC10 Members meeting: 2 times per year**

- Autumn: on our annual conference
- Spring: online



IMEKO

International Measurement Confederation

IMEKO TC10 on Measurement for Diagnostics, Optimization and Control **TC10 activity report for the IMEKO GC** **2023.09.08, Budapest, Hungary**

www.imeko.org

Dr. Zsolt János Viharos, Chair, HUN

Prof. Lorenzo Ciani, Vice-chair, ITA

Prof. Piotr Bilski, Scientific secretary, POL

& ALL TC10 Members

Refreshed TITLE:

Measurement for

- **Diagnostics**
- &
- **Optimization**
- &
- **Control**

→ **Potential & to-do**

You are here: [IMEKO](#) ▶ [TC10](#) ▶ Aims

TC10

[About](#)**Aims**[Members](#)[Events](#)[Documents](#)[Links](#)[Contact](#)[Log in / Log out](#)

TC10 - Measurement for Diagnostics, Optimization & Control - Aims

Aims and objectives of [IMEKO TC10 - Measurement for Diagnostics, Optimization & Control](#) are to facilitate the exchange of scientific and technical information on diagnostics, optimization & control methods, measurement, instrumentation and systems by organizing symposia, discussion meetings and encouraging the publication of scientific papers. Also, the co-operation between scientists and engineers in different subject areas in solving various diagnostics, optimization & control problems is supported.

Topics:

- T1 - Basic principles and development trends in Measurement for Diagnostics, Optimization & Control
- T2 - Sensors, signal acquisition and processing for Diagnostics, Optimization & Control
- T3 - Condition monitoring and maintenance of industrial processes, plants and complex systems
- T4 - Failure & fault detection and prognosis
- T5 - Artificial intelligence, machine learning and data science for Diagnostics, Optimization & Control
- T6 - Industry 4.0 foundations, applications, trends and novelties
- T7 - Methods and algorithms for real-time Diagnostics, Optimization & Control
- T8 - In the loop testing, design, and simulation approaches of dynamic systems
- T9 - Embedded systems in Diagnostics, Optimization & Control
- T10 - Uncertainty in Diagnostics, Optimization & Control
- T11 - Digital transformation
- T12 - Internet of Things (IoT) oriented Measurement for Diagnostics, Optimization & Control
- T13 - Human aspects in Diagnostics, Optimisation & Control
- T14 - Measurement for Diagnostics, Optimization & Control for the improvement of quality of life and environment
- T15 - Product conformity assessment, quality management and process analysis
- T16 - Measurement for Diagnostics, Optimization & Control for safety and risk assessment
- T17 - Non-destructive Testing for Diagnostics, Optimization & Control
- T18 - Standards in Measurement for Diagnostics, Optimization & Control
- T19 - Mechanical systems' principles in Measurement for Diagnostics, Optimization & Control
- T20 - Instrument fault detection, optimization & control in autonomous driving vehicles
- T21 - Diagnostics, Optimization & Control applications in various sectors like industry, transportation, mechatronics, electronics, acoustics, urban systems, living environment, civil engineering, technology of health systems, avionics, automotive, energy, machining, green environment, water treatment and biomedical fields, etc.



Key scientific topics, 2021, last World Congress

(61 published papers, 19% rejection rate)

ISBN: 978-92-990084-6-1. as Peer-reviewed papers

TOP 4 topics

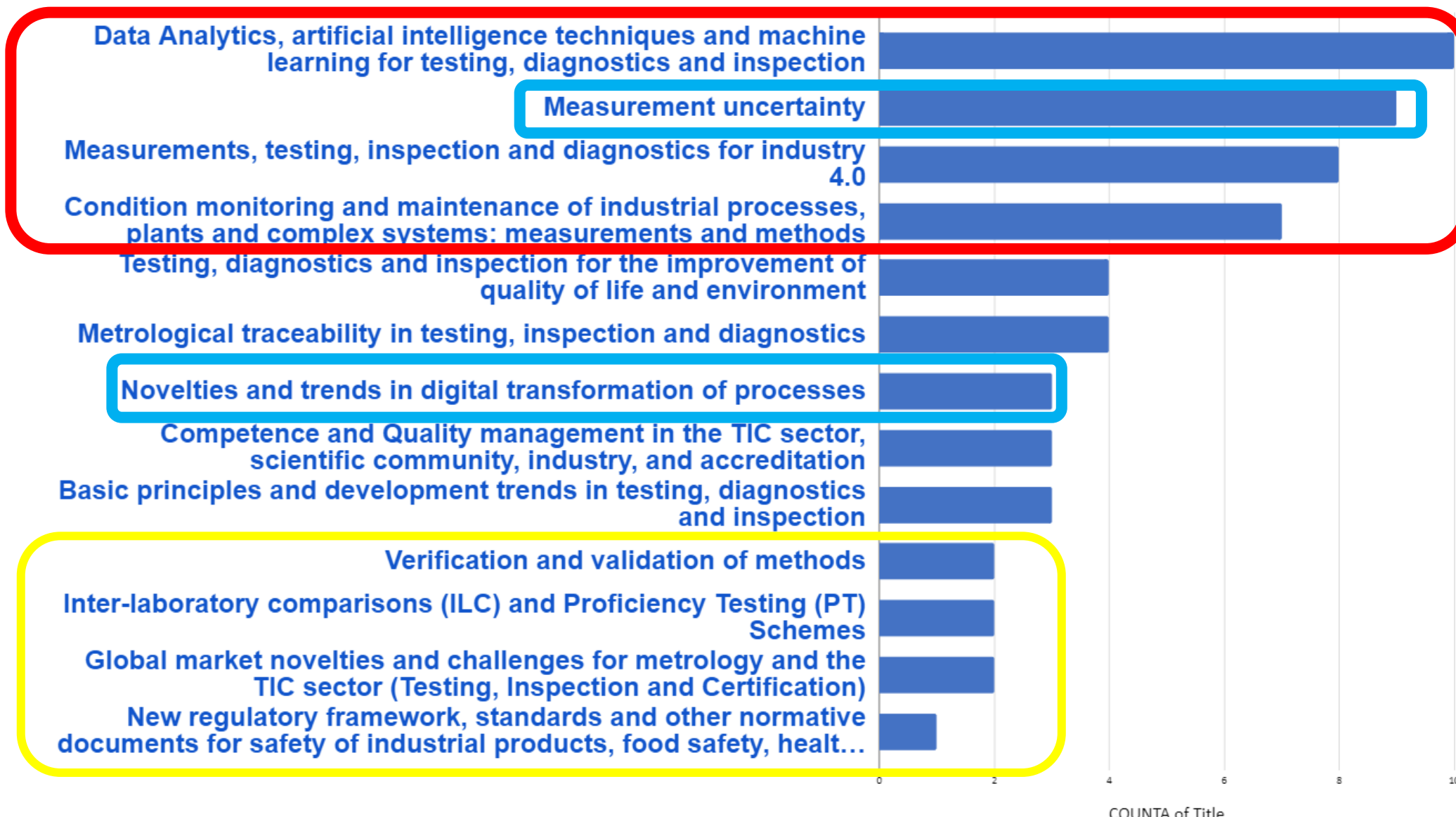
New & robust topics for IMEKO TC10

Open topics (Laboratories, regulation)

For participants:

→ Collaboration potential

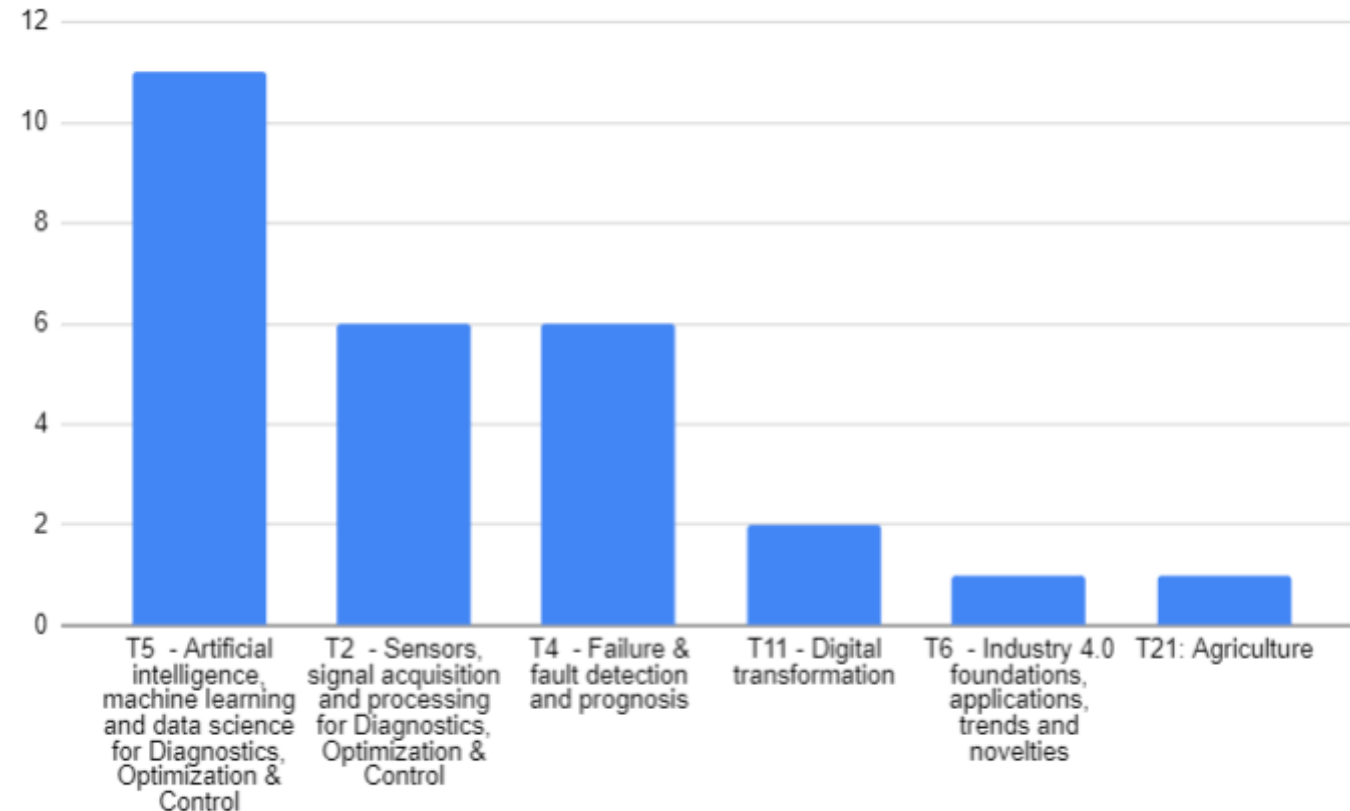
→ Follow others' results: put references



Key scientific topics - 2022

(27 published paper

- **T5 - Artificial intelligence, machine learning and data science for Diagnostics, Optimization & Control**
- **T2 - Sensors, signal acquisition and processing for Diagnostics, Optimization & Control**
- **T4 - Failure & fault detection and prognosis**
- **T11 - Digital transformation**
- **T6 - Industry 4.0 foundations, applications, trends and novelties**
- **T21 - Diagnostics, Optimization & Control applications in various sectors like industry, transportation, mechatronics,and *agriculture*, etc.**



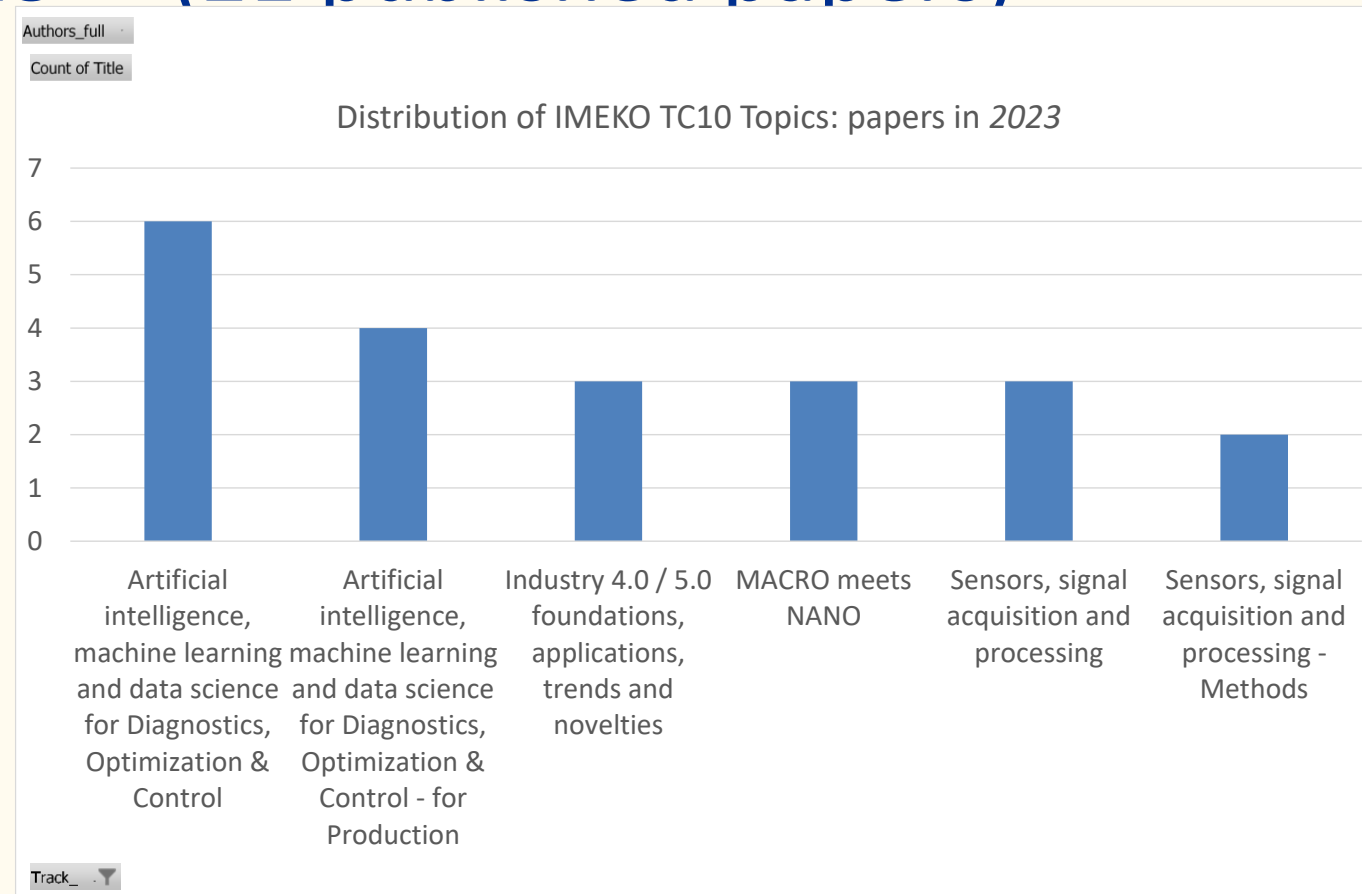
→ **Increase impact**

→ **Collaboration potential**

→ **Follow others' results**

Key scientific topics – 2023 (21 published papers)

- **T5 - Artificial intelligence, machine learning and data science for Diagnostics, Optimization & Control**
- **T2 - Sensors, signal acquisition and processing for Diagnostics, Optimization & Control**
- **T6 - Industry 4.0 foundations, applications, trends and novelties**
- **MACRO meets NANO**



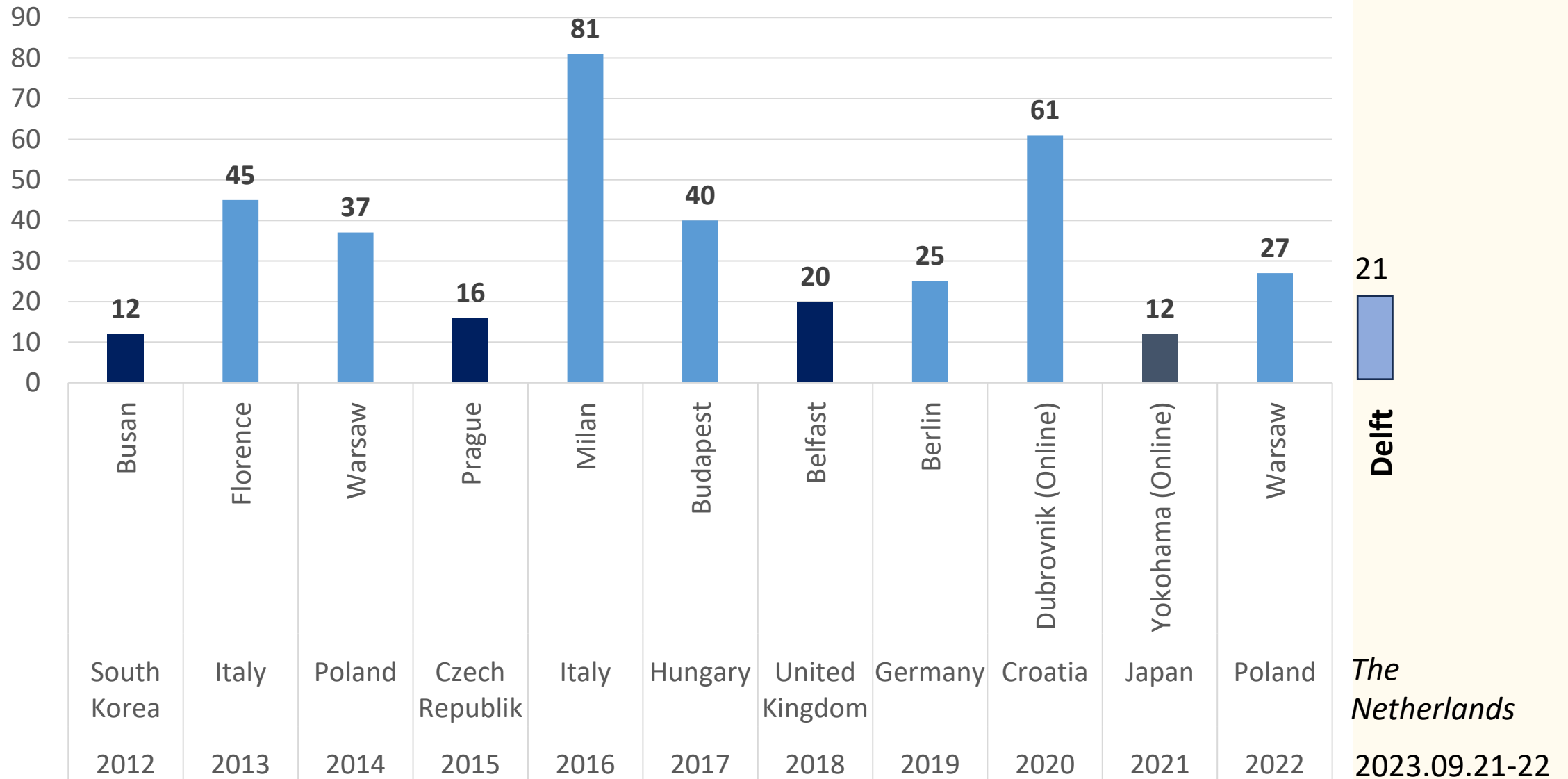
→ **Increase impact**

→ **Collaboration potential**

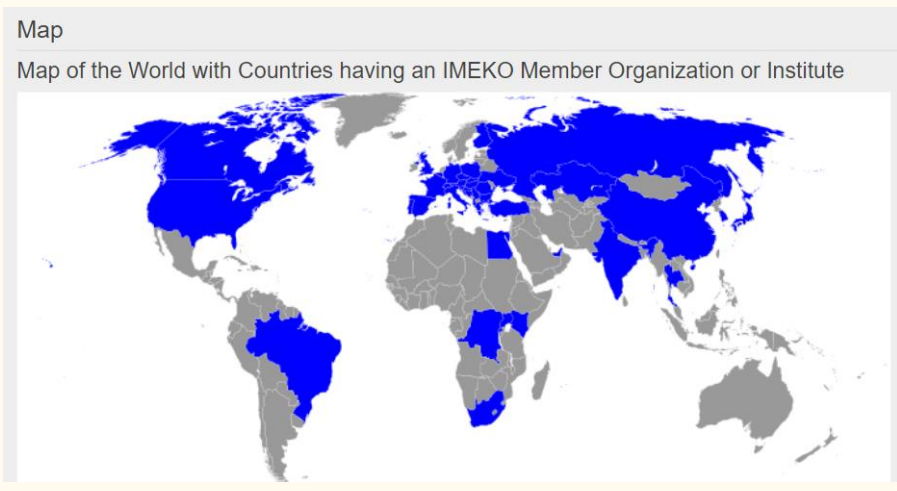
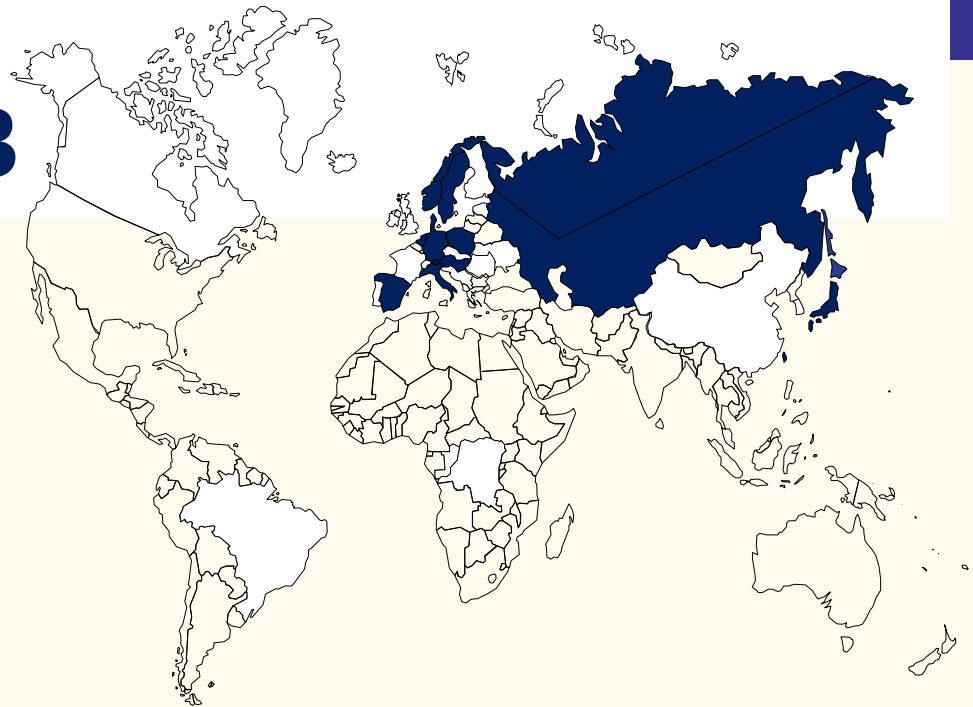
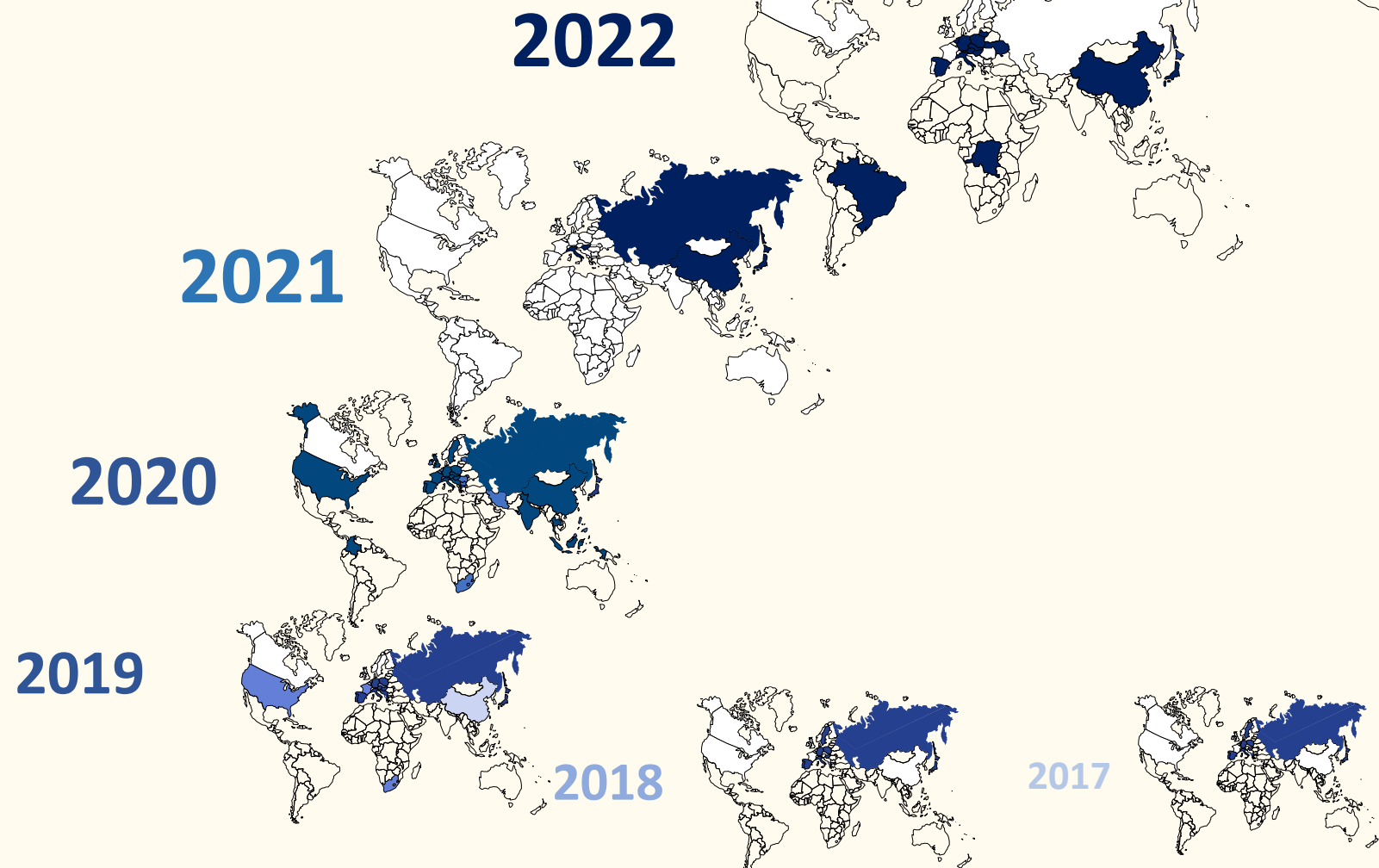
→ **Follow others' results**

Number of publications over the years

Number of IMEKO TC10 publications



Authors (from 13 countries) in 2023



Key, actual challenges

- On TC level
 - **Internationalization**
 - 41 IMEKO member „country” vs. 8-10 „TC10 active member country”
 - The TC10 topic is everywhere → finding the active, motivated people in additional IMEKO countries
 - **Missing:** Albania, **Austria**, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, **China**, Congo, Croatia, Czech Republic, Finland, **Germany**, Greece, India, Kazakhstan, Kenya, Korea, Romania, Rwanda, Russia, Serbia, Slovakia, Slovenia, South Afrika, Spain, Switzerland, Thailand, Türkiye, Uganda, Ukraine, United Arab Emirates, **United Kingdom**, **USA**
 - BUT: The Netherlands...Taiwan...
 - Finding successors for *Inactive members*
 - *How to share the work* among TC10 leaders
 - *Conference* host country: having *more papers/participants by the host*
 - Various difficulties with the new conferencing system (support needed)
 - Lack of joint scientific projects
 - On IMEKO level
 - TC Functioning WG – to continue

Encouraging new members

- **The main responsibilities for current and future IMEKO TC10 members:**
 - Do research in our TC10 fields, send papers and ***participate (with presentations) on (all) the TC10 conferences, workshops and the IMEKO Word Congresses***
 - Explore, get in contacts and **build relationship with researchers in his/her own country doing research in our TC10 fields – call attention to IMEKO TC10 results, conferences, papers in their country**
 - **Do networking inside our TC10, do common projects, expert exchange, common scientific collaborations, etc.**
 - ***Enjoy the scientific life inside our IMEKO TC10 on Diagnostics, Optimization and Control***
- **Sending an**
 - (preferred Europass) CV and
 - a short motivation letter

to TC10 Chairperson (viharos.zsolt@sztaki.hu) with cc. to imeko@hunmeko.org and

 - the TC10 Chairperson (Dr. Zsolt János Viharos) will organise the next steps:
 - discussion with the candidate
 - nomination to IMEKO secretary
 - IMEKO secretary will organize the approval from the relevant NMO presidents
 - ***Having all the documents, the approval will be in next IMEKO GC meeting***
 - This will be the starting day of the membership

IMEKO TC10 members: sum of IMEKO TC10 papers, 2009-2023





IMEKO Working Group on TC Functioning

Results of the annual TC Survey (testing) in IMEKO TC10 on Measurement for Diagnostics, Optimization and Control

2022.03.03.

Dr. Zsolt János VIHAROS

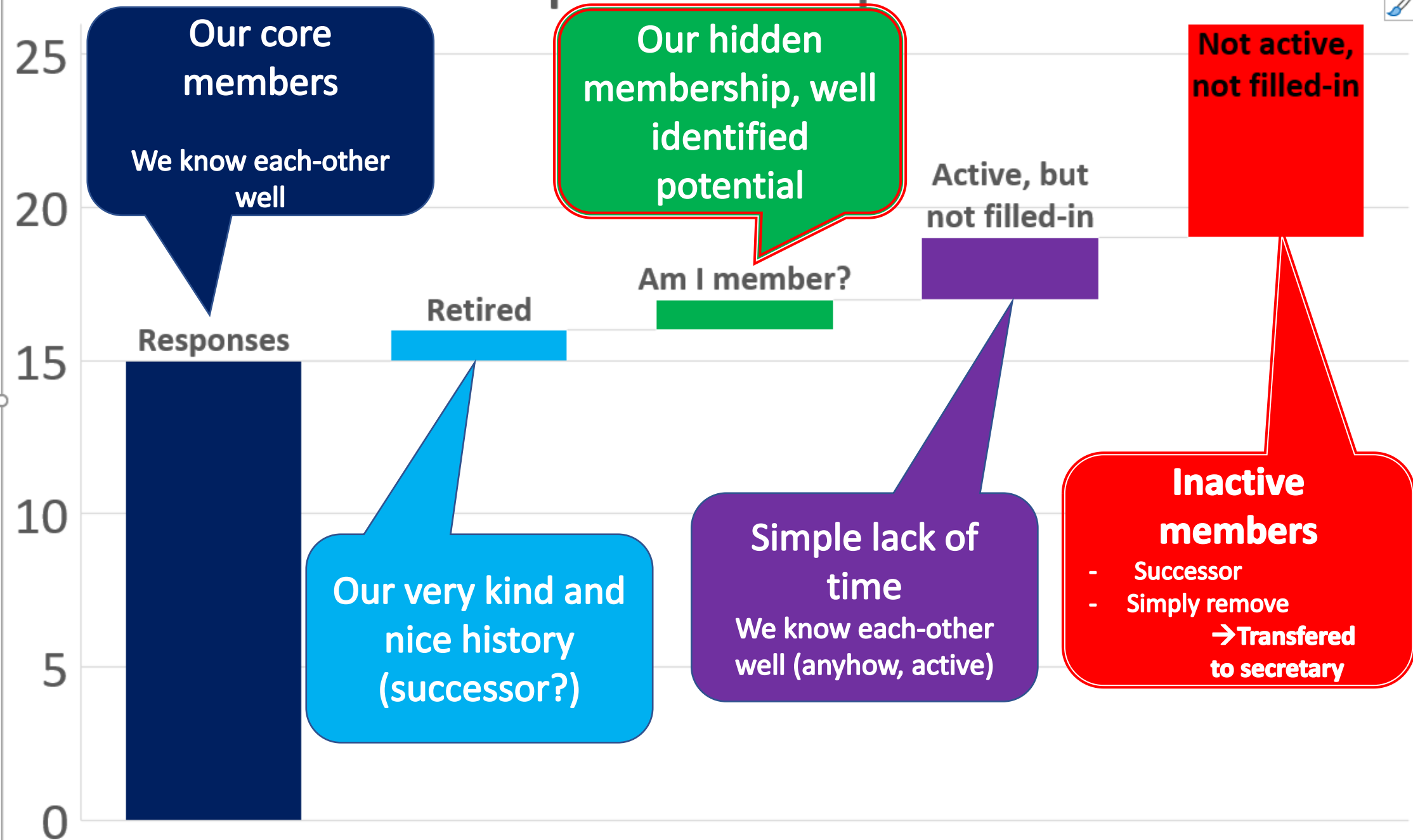
Senior research fellow, Institute for Computer Science and Control

President of the Hungarian Member Organization of IMEKO

Chairperson, IMEKO TC10 on Measurement for Diagnostics, Optimization and Control

TC10 questioner responses

Inactive members were identified but not yet solved

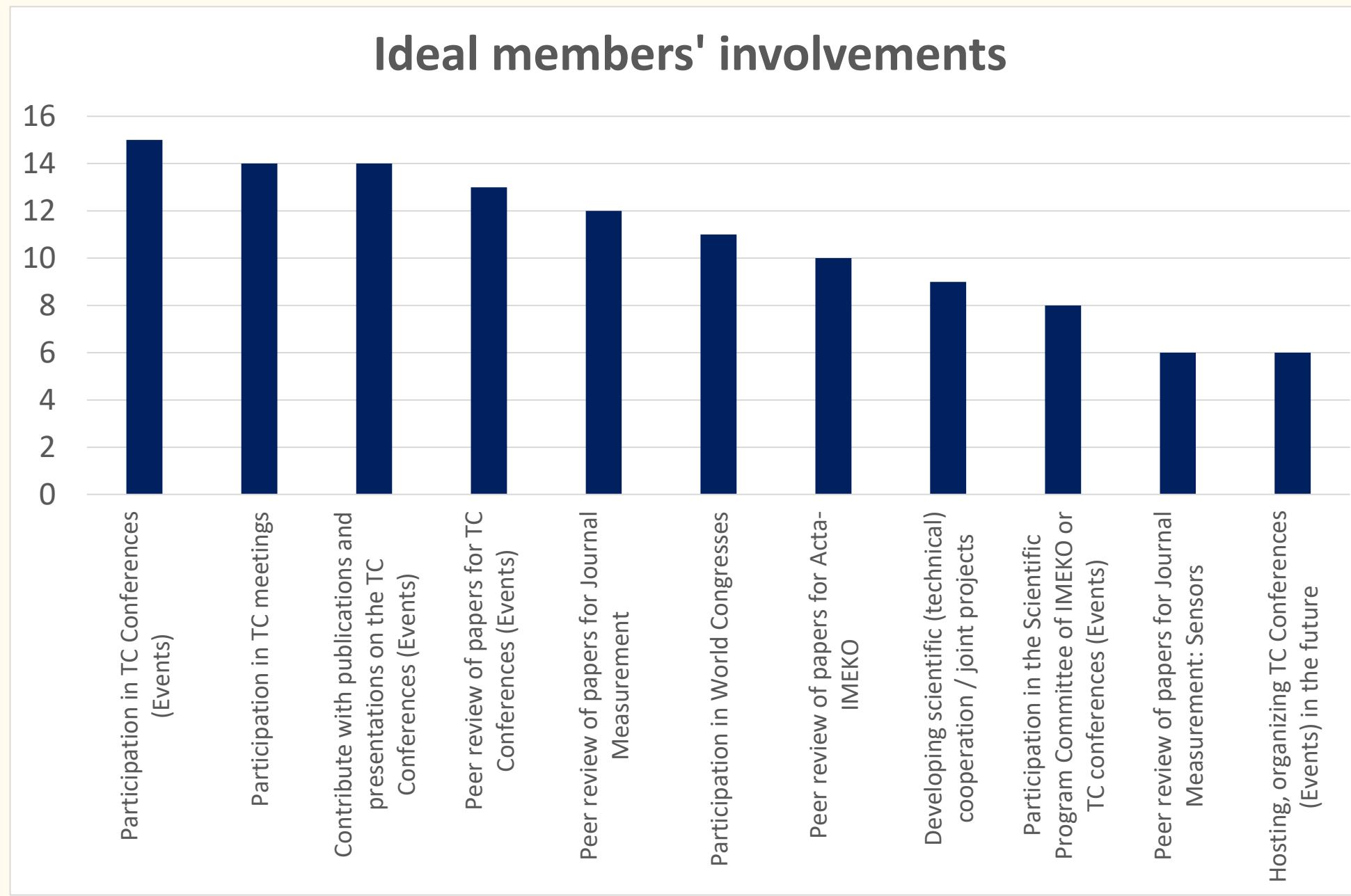


TC9 - Flow Measurement - B

No longer members

Name	Affiliation with address
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Dr Jiunn Haur Shaw	Measurement Standards and Legal Metrology Div. Centre for Measurement Standards/ITRI #321 Sec. 2 Kuang Fu Road Hsinchu TAIWAN

- Members expressed their activity goals inside the TC



Topic 4.: (additional benefit) Members' ideas for improvements

„Please write here any ideas *how to improve the TC.*”

- Organize bimonthly meetings to allow mutual **knowledge of their research activities** in order
 - to start new collaborations and the possible
 - participation in projects of European character.
- **Promoting the contribution of all members**



Technical Committee
TC10

Measurement for Diagnostics, Optimization and Control

Contacts

Prof. Marcantonio Catelani (Honorary member)	ITALY
Prof. Álvaro Silva Ribeiro	PORTUGAL
Prof. Laszlo Monostori	HUNGARY
Prof. Artur Lopes Ribeiro	PORTUGAL
Prof. Yakov Ben-Haim	ISRAEL
Prof. Eduard Egusquiza	SPAIN
Prof. B. K. N. Rao	UNITED KINGDOM
Prof. He Zhengjia	CHINA
Prof. Romauld Zielonko	POLAND
Dr. Eng. Yukio Hiranaka	JAPAN
Dr. Justinas Janulevicius	LITHUANIA
Dr. Lauryna Siaudinyte	THE NETHERLANDS

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[Registration](#)

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[Sponsorship](#)

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(Invited, Member of IMEKO TC10)

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Prof. Artur Lopes Ribeiro	PORTUGAL
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Dr. Oleksandr I. Shevchenko	UKRAINE
Mr Balázs Scherer	HUNGARY
Prof. Giulio D'Emilia	ITALY
Prof. Dr. Ing. David Delaux	FRANCE
Dr. Marco Carratú	ITALY
Dr. Gábor Nick	HUNGARY
Dr. Gabriele Patrizi	ITALY



- Outcomes

1. Proceedings of the conference

- NOT Open Access

2. Proceedings on the IMEKO website

- Open Access
- **With DOI !**
- Indexed in many databases

3. Special issue(s)

- Case-based
- Full review - risky

IMEKO TC10 Conference on MAC x +

imekotc10-2023.sztaki.hu/index.php

Proman 1.0 - EMI P... NAPELEM_GROWAT... Neptun.Net PE_OW... Zsolt János Dr. Viha... Fájlok - SZTAKI Nex... EPIC new - Google... Boards | Trello TC10 MemberQues... Adatelemzési képzé...

IMEKO International Measurement Confederation **TC10** Technical Committee **Measurement for Diagnostics, Optimization and Control**

Navigation

- [Home](#)
- [Deadlines](#)
- [Committees](#)
- [Authors](#)
- [Invited Keynote Lecturers](#)
- [Programme](#)
- [Venue](#)
- [Registration](#)
- [Accommodation](#)
- [Sponsorship](#)
- [Photos](#)
- [Privacy Policy](#)
- [Contacts](#)

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

INVITATION

The International Measurement Confederation IMEKO, Technical Committee 10 on Measurement for Diagnostics, Optimization and Control (<https://www.imeko.org/index.php/tc10-homepage>) kindly invites you to attend the 19th IMEKO TC10 Conference: "MACRO meets NANO in Measurement for Diagnostics, Optimization and Control" to be held in Delft, The Netherlands on September 21-22, 2023.

The Conference is a forum for advancing knowledge and exchange ideas on methods, principles, instruments, technologies and IT tools, standards, industrial applications, conformity assessment, quality management and measurement challenges on Diagnostics, Optimization and Control as well as their diffusion across the scientific community. Participants have an excellent opportunity to meet top specialists from industry and academia all over the world and to enhance their international co-operation. The programme will feature scientists and experts as leading keynote speakers for selected presentations on the main topics of the Conference.

CALL FOR PAPERS

Authors are kindly invited to submit extended abstracts in the appointed scientific topics, three to four pages long in A4 format. The abstract should report original research results of theoretical or applied nature and should explain the significance of the contribution to the research field. The abstracts will be reviewed by the International Programme Committee. Electronic abstracts must be in Adobe Acrobat (pdf) and should be sent according to the procedure described on <https://www.imekotc10-2023.sztaki.hu/>. Proceedings identifier: ISBN: 978-92-990090-4-8.

SPECIAL ISSUE

Selected papers of the conference will be invited to the Measurement, Measurement Sensors and Acta IMEKO Special Issues. All submitted papers will undergo a regular peer review process. The manuscript MUST be significantly extended beyond the IMEKO TC10 conference paper.

SCIENTIFIC TOPICS

- Basic principles and development trends in Measurement for Diagnostics, Optimization & Control
- Sensors, signal acquisition and processing
- Failure & fault detection and prognosis
- Artificial intelligence, machine learning and data science for Diagnostics, Optimization & Control
- Industry 4.0 / 5.0 foundations, applications, trends and novelties

IMEKO

• Outcomes

1. Proceedings of the conference

- NOT Open Access

2. Proceedings on the IMEKO website

- Open Access
- With DOI !
- Indexed in many databases

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- Case-based
- Full review - risky



19th IMEKO TC10 Conference: "MACRO meets NANO in Measurement for Diagnostics, Optimization and Control"

Delft, The Netherlands on September 21-22, 2023.

Organiser: Institute for Computer Science and Control (SZTAKI)

PROCEEDINGS

Prepared by



Sponsors



Seeing beyond



National Metrology Institute



Editors: Dr. Zsolt János Viharos; Prof. Lorenzo Ciani; Prof. Piotr Bilski

Identification:

ISBN 978-92-990090-4-8.

19th IMEKO TC10 Conference
"MACRO meets NANO in Measurement for Diagnostics, Optimization and Control"
Delft, The Netherlands, September 21-22, 2023

pillars is not taken into account in the inverse modelling. Specifically, we find for $R=1.0$ that the estimated width is 320 nm, instead of 340 nm as found for the corner-rounded pillars. On the other hand, the estimated height is 140 nm in both cases.

programme co-financed by the Participating States and from the European Union's Horizon 2020 research and innovation programme. This work is partly funded by The Danish Agency for Higher Education and Science.

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Table 2: Parameters from inverse modelling

Period / nm	Width / nm	Height / nm	R
Nominal	250	150	1.0
Ellipsometry	340	140	0.8

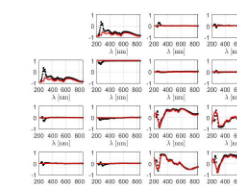


Figure 7: Ellipsometry data showing 15 Mueller matrix elements and the simulation curves of the best fit solution, see Table 2.

VII. CONCLUSIONS AND OUTLOOK

In this paper, we have discussed the fabrication of reference samples for nano-structured devices. According to the process chain shown, several such elements were fabricated and are subsequently investigated by SEM and scatterometry methods. Work on the reconstruction has been initiated.

VIII. ACKNOWLEDGMENTS

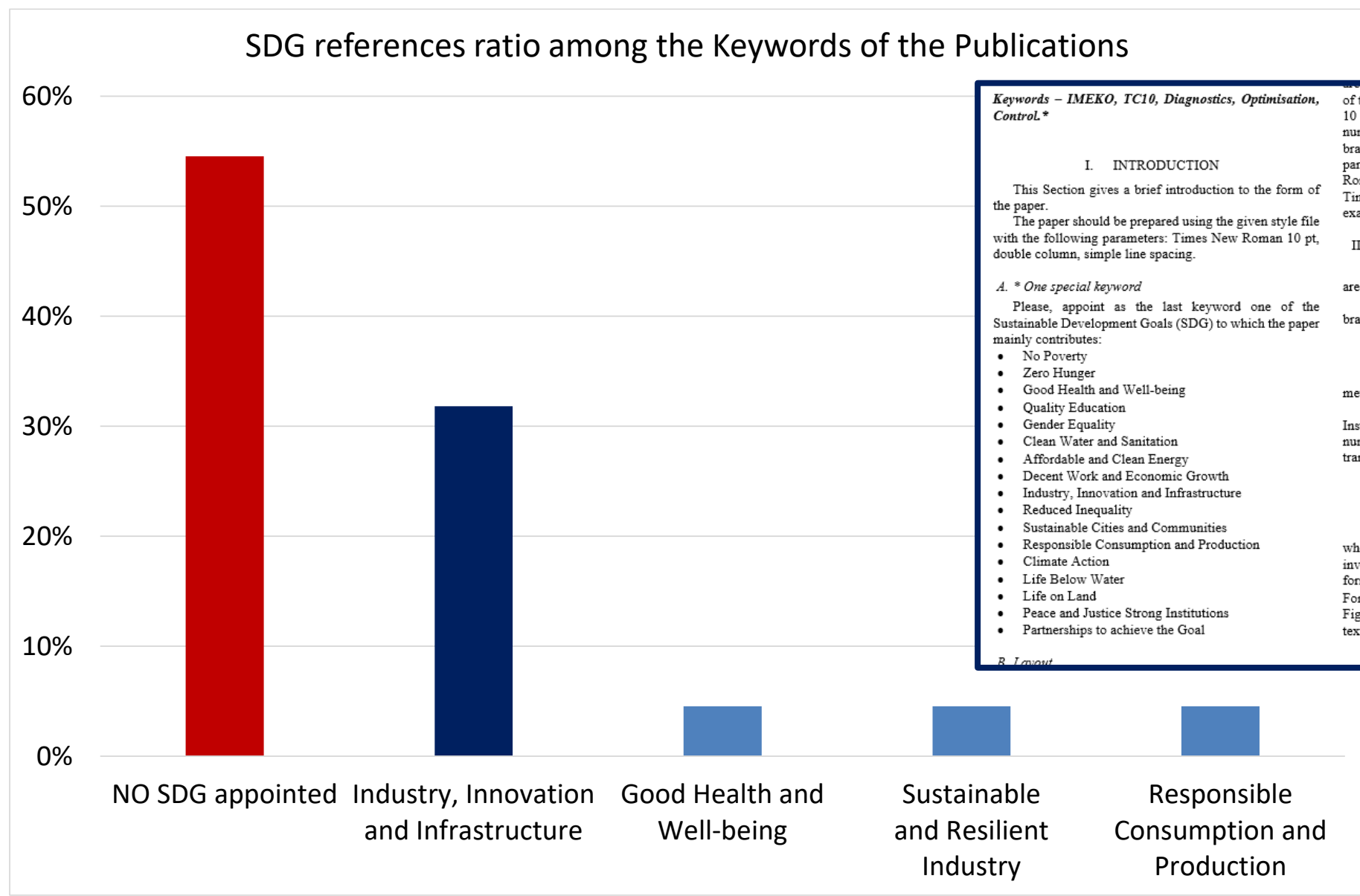
This project (2020D04 ATMOC and 20FUN02 POLight) has received funding from the EMPIR.



134



Keywords vs. SDG (Sustainable Development Goals)



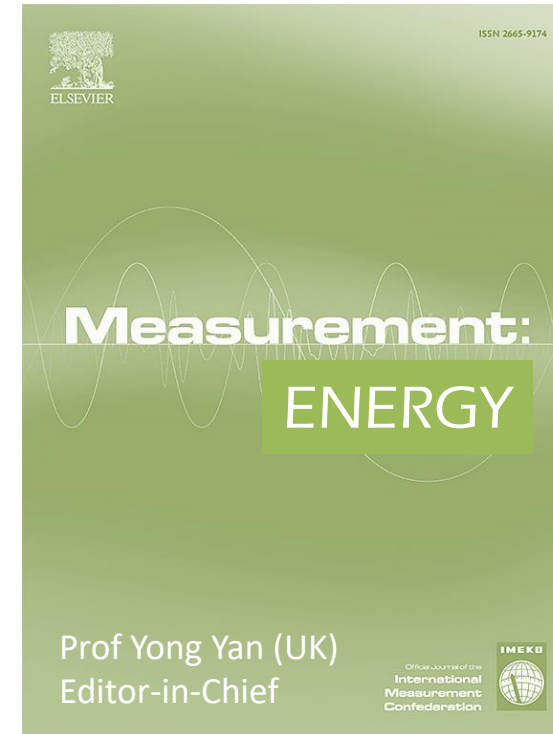
Four IMEKO Journals now being published

- IMEKO's Publications cover a very wide scope



Measurement: Energy – now approved by Elsevier

- *Measurement: Energy* will now be launched by Elsevier in 2023 (this has been delayed from 2022)
- Professor Yong Yan will be Editor-in-Chief and is working with Elsevier to develop the Aims and Scope statement and the Board membership
- On-going and increasing financial support for IMEKO



IMEKO Publications - highlights

- Tens of thousands of authors and reviewers worldwide can see IMEKO through the 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), >1000 more than previous years and rejection rate 82%
 - *Measurement: Sensors*: Cite score rating increasing. As well as Scopus, it is also indexed by 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
- Elsevier payment continues to represent the major part of IMEKO's annual income



Participation in IMEKO developments

- **WGs**
 - TC Functioning
 - Publications
 - How to organize
 - „Legal” updates
- We introduced **2 Members’ meetings per year**
 - **IMEKO TC10 Spring meeting – Online**
 - Review & actualities
 - „Push” *our annual conference participation* inside Members
 - **IMEKO TC10 Autumn meeting – In person**, in the program of our annual conference
 - Review & monitoring
 - *Discussion 2-3 challenges*, decisions
 - *Prepare our next conference locations*
 - *New member candidates – expectation: First, at least 2 papers on our TC10 conferences*
- **Specialissues**

Key, actual challenges

- On TC level
 - **Internationalization**
 - 45 IMEKO member „country” vs. 8-10 „TC10 active member country”
 - The TC10 topic is everywhere → finding the active, motivated people in additional IMEKO countries
 - **Missing:** Albania, Austria, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, China, Congo, Croatia, Czech Republic, Finland, Germany, Greece, India, Kazakhstan, Kenya, Korea, Romania, Rwanda, Russia, Serbia, Slovakia, Slovenia, South Afrika, Spain, Switzerland, Thailand, Türkiye, Uganda, Ukraine, United Arab Emirates, United Kingdom, USA
 - BUT: The Netherlands...Taiwan...
 - Finding successors for **Inactive members**
 - **How to share the work** among TC10 leaders
 - **Conference** host country: having **more papers/participants by the host**
 - Various **difficulties with the new conferencing system** (support needed)
 - **Lack of joint scientific projects**
 - On IMEKO level
 - TC Functioning WG – to continue



IMEKO

International Measurement Confederation

Measurement for Diagnostics, Optimization and Control

Technical
Committee
TC10



SZTAKI



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EXCELLENCE **EPIC**
Production Informatics and Control

Enjoy the scientific life inside our IMEKO TC10 on Measurement for Diagnostics, Optimization and Control



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Vice Dean for Science of the John von Neumann University

President of the Hungarian Member Organisation of IMEKO

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Seeing beyond

PI



Delfts
Brouw
huis

HOME EVENTS BEERS KITCHEN BREWERY ABOUT GROUPS RESERVATIONS DELFTSE BROUWERS CONTACT

f i n

Delfts Brouw huis

EETHUIS
& BIERTUIN

RESERVEREN



3 COURSES

APPETIZER BOARD

SOURDOUGH BREAD FROM MENEER LEFFERS WITH LEMON CHIVE BUTTER, PAIN D'ARDENNE,
WEISSWURST WITH BAVARIAN SWEET MUSTARD, LEBERKÄSE, VERMEER CHEESE,
SCHLOSSBERGER ALT KÄSE, BAVARIAN PRETZEL WITH OBATZDA AND PICKLES

MAIN COURSE CHOICE FROM:

STEW WITH DELFT TRIPLE BEER

PORK NECK, SILVER ONIONS, MUSHROOMS AND CARROTS, FRIES AND A SMALL SALAD

FISH OF THE DAY*

ASK FOR THE CATCH OF THE DAY

FLAMMKUCHEN (V)

GARLIC CREAM, ROASTED BELL PEPPER, RED ONION, GREEN ASPARAGUS,
CHERRY TOMATO AND GRATED HARD CHEESE

BREWERS BURGER (ORGANIC)

TOMATO COMPOTE, BACON MAYONNAISE, CRISPY ONION RINGS, CHEDDAR CHEESE AND FRIES

DESSERT CHOICE FROM:

'CAFÉ GLACÉ'

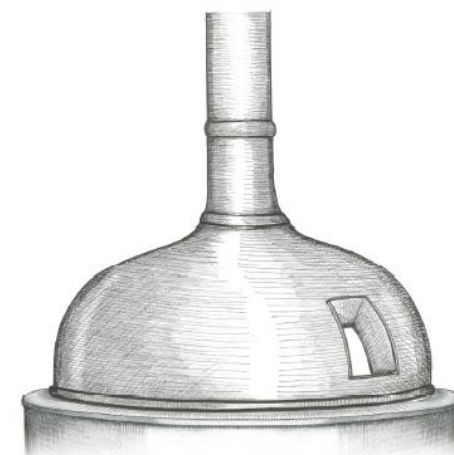
VANILLA ICE CREAM WITH COFFEE SAUCE,
FRANGELICO SABAYON AND COFFEE CRUMBLE

RICE PUDDING

FOREST FRUIT COMPOTE AND
STRAWBERRY ICE CREAM

+ 2 drinks

*Delfts
Brouw
huis*
EETHUIS
& BIERTUIN



Best 8 min 10 min 3 min

Hotel Arsenaal Delft By WestCord, Korte

Delfts Brouwhuis, Hippolytusbuurt 43, 26

Add destination

Options

Send directions to your phone

via Koornmarkt 10 min 700 m

Details

Mostly flat

Delfts... 10 min

Delft

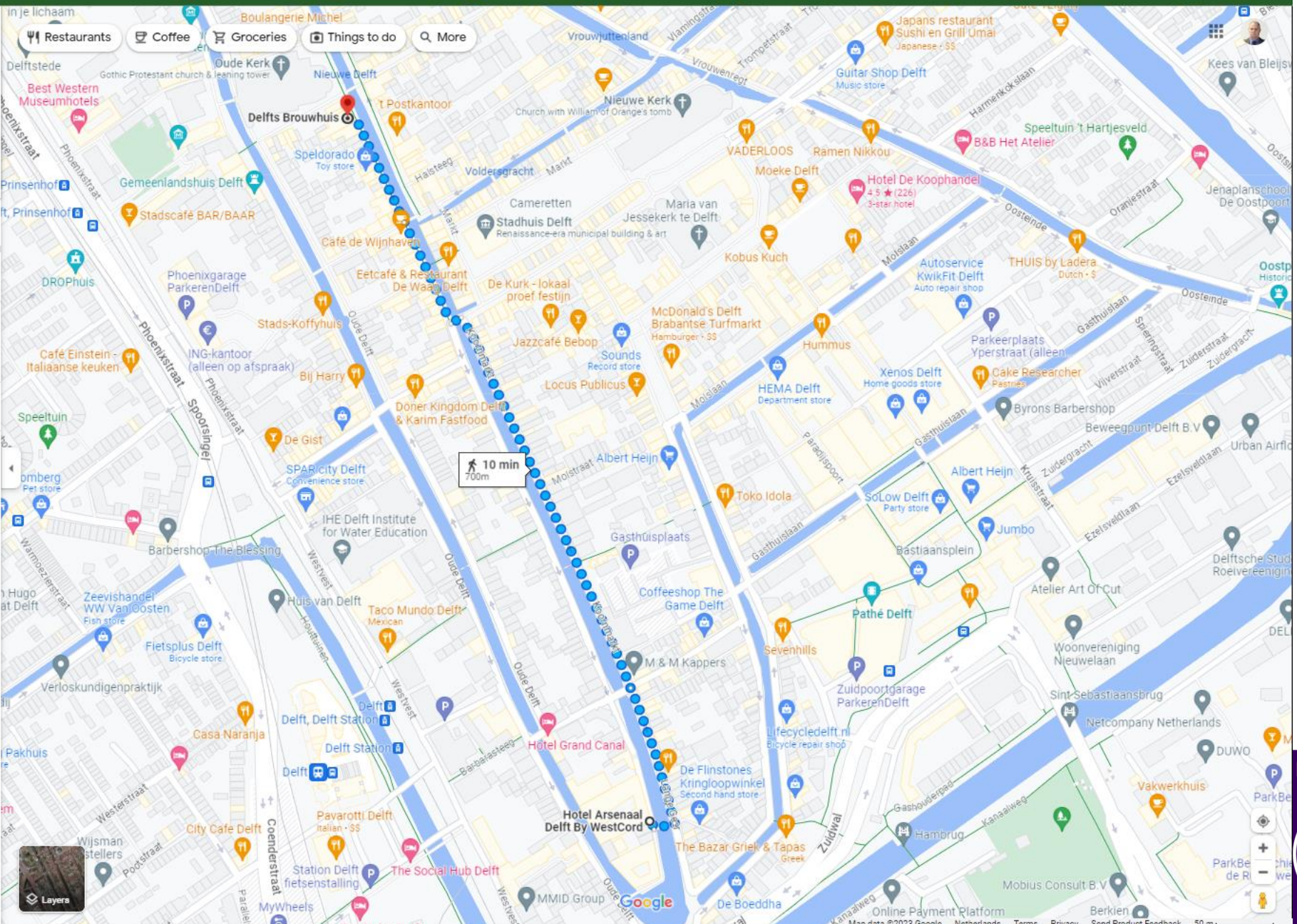
Bludenz

Tündérezdő Rendezvény

Kecskemét

Vienna

Hilti AG



Minutes

IMEKO TC10 Members meeting, 2023.09.21.

Additional comments, requests:

- Documentation on non-TC10 member participants (person, country, Institute etc.) (task for V. Zsolt for the next meetings)
- Special issues handling (It is questionable, we will see)
- Locations with high possibility for next conferences (to be validated)
 - Germany: Aachen (2025, the 20th IMEKO TC10 conference)
 - Austria: Vienna or Innsbruck (2026)
 - Taiwan: Taipei (2028)
- Special food for the dinner
 - We can solve this easily, this evening