

TC ANNUAL REPORTING FORM

IMS Technical Committee

TC-42 Photonic Technology in Instrumentation and Measurement

Reporting period

| Starting date (dd/mm/yy) | Ending date (dd/mm/yy) | Date of submission (dd/mm/yy) |
|--------------------------|------------------------|-------------------------------|
| 01/01/25 | 31/12/25 | 22/02/26 |

| Website | Last update (mm/yy) |
|---|---------------------|
| https://ieee-ims.org/technical-committee/tc-42-photonic-technology-instrumentation-and-measurement | 01/23 |

TC Chair or co-Chairs

| First Name | Second Name | Family Name | Affiliation /Address | Membership number | Phone | e-mail address | Date of election |
|------------|-------------|-------------|------------------------------------|-------------------|-----------------|----------------------------|------------------|
| George | | Xiao | National Research Council (Canada) | 90530871 (FIEEE) | 613-991-6159 | George.Xiao@nrc-cnrc.gc.ca | 14/07/17 |
| Tuan | | Guo | Jinan University (China) | 90754842 (FIEEE) | +86-13450415860 | tuanguo@jnu.edu.cn | 27/11/25 |

Secretary (check the right box) Present Not Present

| First Name | Second Name | Family Name | Affiliation /Address | Membership number | Phone | e-mail address | Date of election |
|------------|-------------|-------------|----------------------|-------------------|-------|----------------|------------------|
|------------|-------------|-------------|----------------------|-------------------|-------|----------------|------------------|

TC Membership list^(*)

| First Name | Second Name | Family Name | Affiliation /Address | Membership number | Phone | e-mail address | TC assignments (joining year) |
|------------|-------------|-------------|-----------------------------------|-------------------|-------|--------------------------|-------------------------------|
| Zheng | Liu | | University of British Columbia | | | zheng.liu@ieee.org | |
| Alberto | Vallan | | Politecnico di Torino | | | alberto.vallan@polito.it | |
| Wojtek | Bock | | Université du Québec en Outaouais | | | wojtek.bock@uqo.ca | |
| Zuyuan | He | | Shanghai Jiaotong University | | | zuyuanhe@sjtu.edu.cn | |

* Please add as many rows as needed

| | | | |
|-----------|---------|--|------------------------------|
| Xingyu | Fan | Shanghai Jiaotong University | fan.xinyu@sjtu.edu.cn |
| Jianping | Yao | University of Ottawa | jpyao@uottawa.ca |
| Hwa-yaw | Tam | Hong Kong Polytechnic University | eehytam@polyu.edu.hk |
| Chao | Lu | Hong Kong Polytechnic University | enluchao@polyu.edu.hk |
| Yuwen | Qin | GuangDong University of Technology | qinyw@gdut.edu.cn |
| Luigi | Rovati | University of Modena and Reggio Emilia | luigi.rovati@unimore.it |
| Guido | Perrone | Politecnico di Torino | guido.perrone@polito.it |
| Xueguang | Qiao | Northwestern University | xgqiao@nwu.edu.cn |
| Libo | Yuan | Guilin University of Electronic Technology | lbyuan@vip.sina.com |
| Yong | Zhao | Northeastern University | zhaoyong@ise.neu.edu.cn |
| Tongyu | Liu | Qilu Technology University | tongyu.liu@vip.iss-ms.com.cn |
| Fei | Xu | Nanjing University | feixu@nju.edu.cn |
| Jun | Yang | Guang Dong University of Technology | yangj@gdut.edu.cn |
| Minghong | Yang | Wuhan University of Technology | minghong.yang@whut.edu.cn |
| Yongkang | Dong | Harbin Institute of Technology | aldendong@163.com |
| Jianzhong | Zhang | Harbin Engineering University | zhangjianzhong@hrbeu.edu.cn |
| Tonglei | Cheng | Northeastern University | chengtonglei@ise.neu.edu.cn |
| Xinyu | Fan | Shanghai Jiaotong University | fan.xinyu@sjtu.edu.cn |
| Zhaohui | Li | Sun Yat-sen University | lzh88@mail.sysu.edu.cn |

TC mission – field of expertise (max. 1000 char. Including spaces)

The goals of this committee are:

- Promote and disseminate technical information related to the fields listed below via workshops, lectures, and technical papers.
 - Physical, mechanical, acoustic and electromagnetic sensors and instrumentation
 - Chemical, environmental, biological and energy sensors and instrumentation
 - Interferometric, polarimetric and laser-based sensors and instrumentation (including gyroscopes and resonators, et al)
 - Micro- and nano-structured fiber sensors and instrumentation (including photonic crystal fiber and grating-based sensors,

* Please add as many rows as needed

et al)

- Distributed and multiplexed sensing and sensor networking (including OTDR, Brillouin and Raman technologies, et al)
- Other technologies (including imaging-related, spectroscopic and those based on smart-phone platforms, et al).
- Industrial, energy, transportation, clinical, environmental, security and defense, applications
- Smart structures (including structural health monitoring and photonics in additive manufacturing, et al)
- New concepts and elements (e.g., fibers and waveguide devices, integrated and subsystems), effects (e.g., plasmonics, optomechanics, and quantum sensing), technologies (including nanophotonics, frequency combs) and materials (e.g., meta and structured materials) for photonic measurement and instrumentation
- Technology commercialization and standardization.
- Develop standards in the field as appropriate.
- Maintain liaison with other groups, societies and organizations working in the same/similar area.
- Organize special sessions during the I2MTC and publish special issues in IMS sponsored IEEE/OSA Journal of Lightwave Technology.

TC meetings in the reporting period^(*)

| Date (dd/mm/yy) | Online / Face2Face | Attendance (number) | TC Members | Information sent within 4 months to (Yes/No) | | |
|-----------------|--------------------|---------------------|--|---|-------------|-----------------|
| | | | | Chair of TSAC | IM Magazine | Other (specify) |
| 07/03/2025 | Face2Face | 2 | George Xiao, Tuan Guo | Special Session of MeSSAC 2025 | Yes | Yes |
| 20/05/2025 | Face2Face | 4 | George Xiao, Yong Yan, Luigi Rovati, Zheng Liu | I2MTC 2025 | None | Yes |
| 18/08/2025 | Face2Face | 3 | Tuan Guo, Yong Yan, Kam-Weng Tam | Measurement, sensor systems and applications conference (MeSSAC 2025) | None | Yes |
| 28/09/2025 | Face2Face | 2 | George Xiao, Tuan Guo | Optical fiber sensor China (OFSC 2025) | None | Yes |

Minutes of the yearly meeting (separate file)¹:

Participation in Society sponsored Events (Conferences, Symposia, Workshops)^(*)

| Name of the Event | Starting date (event) (dd/mm/yy) | Ending date (event) (dd/mm/yy) | Date Participation (dd/mm/yy) | Type of participation (Yes/No) | | | |
|---|----------------------------------|--------------------------------|-------------------------------|--------------------------------|---|----------|---|
| | | | | Sponsorship | Session | Tutorial | Other (specify) ² |
| I2MTC 2025 | 19/05/2025 | 22/05/2025 | 21/05/2025 | None | None | None | Associate TCP & Section Chair of Optical fiber sensor |
| Measurement, sensor systems and applications conference (MeSSAC 2025) | 17/08/2025 | 20/08/2025 | 18/08/2025 | None | Advanced measurements of batteries, fuel cells and other energy storage devices | None | Associate TCP & Special Session Chair |

Involvement in standard development^(*)

| Standard | Working Group | Revision | Activity in the reporting period, including dates | Notes, attendance |
|----------|---------------|----------|---|-------------------|
|----------|---------------|----------|---|-------------------|

¹ Yes/No, date of the yearly meeting;

² For example, Involvement in reviewing papers (and indicate approximate number of paper reviews for the listed event)

* Please add as many rows as needed



None

Participation in the development of Society Educational Programs^(*)

| Program name | Involvement of chapters and sections | Activity in the reporting period, including dates | Notes, attendance |
|--------------|--------------------------------------|---|-------------------|
|--------------|--------------------------------------|---|-------------------|

None

Other Activities (tutorials, teaching, career, cooperation, publications, joint activity with chapters or sections)^(*)

| Type of activity | Starting date (dd/mm/yy) | Ending date (dd/mm/yy) | Activity in the reporting period | Notes, attendance |
|--|--------------------------|------------------------|----------------------------------|--|
| IEEE Instrumentation & Measurement Magazine (Short Review) | 05/03/2025 | 01/10/2025 | Article Author (Tuan Guo) | Operando Battery Monitoring Using Lab-on-Fiber Optical Sensing Technologies |
| IEEE Transactions on Instrumentation and Measurements (Research Article) | 09/09/2024 | 09/01/2025 | Article Author (Tuan Guo) | Double Resonant Cavity Enhanced Photoacoustic Gas Sensor for Acetylene Detection |
| Photonic Sensors (Research Article) | 10/10/2024 | 13/05/2025 | Article Author (Tuan Guo) | Ultrafast and Reproducible Fiber-Optic Hydrogen Sensor via a Tilted Fiber Grating with Pd/WO3 Nanocoating |
| IEEE Journal of Lightwave Technology (Research Article) | 09/12/2024 | 23/06/2025 | Article Author (Tuan Guo) | Sensitive and Repeatable Optical Fiber Hydrogen Sensors Using Plasma-induced Oxygen Vacancies Magnetron Sputtering Coating Technique |

Recommended candidates^(*)

| Type (ADCOM, Fellow, Award –specify-) | First Name | Second Name | Family Name | Affiliation /Address | Motivation |
|---------------------------------------|------------|-------------|-------------|----------------------|---|
| IEEE Fellow | Tuan | | Guo | Jinan University | For contributions to optical fiber sensing technologies for the renewable energy and healthcare industries. |

TC operating Plan: near-term plans for the upcoming year, including scheduled meetings, activities, and so on (max. 1000 char. Including spaces)

- TC-42 meeting during I2MTC 2026
- Organize a special session for 2026 IEEE International Instrumentation and Measurement Technology Conference (I2MTC 2026), focus on AI for Activity Monitoring and Mental Health Detection in Older Adults
- Prepare the Technical Committees report and published in IEEE Instrumentation & Measurement Magazine.
- Organize a new special session in the journal of IEEE/OSA Journal of Lightwave Technology behalf of IEEE-IMS.
- The special issue is "GUIDED LIGHTWAVES FOR SENSORS & MEASUREMENT SYSTEMS: ADVANCED TECHNIQUES and APPLICATIONS". (This will be the 5th one following our previous 2017, 2019, 2021, and 2023)

^{*} Please add as many rows as needed



TC operating plan: long term vision from 2-5 years out, based on IMS Strategic Plan, including areas of strength, areas for improvement, how is the subject area going to change, planned actions for lifting achievement succession plans etc. (max. 1000 char. Including spaces)

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- Develop standards in the field as appropriate.
 - Organize special session I2MTC for 2026–2028.
 - Organize IEEE-IMS special session in the journal of IEEE/OSA Journal of Lightwave Technology.
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TC convergence, synergy, cooperation with other TC, from I&M or other societies (max. 1000 char. Including spaces)

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- Maintain liaison with other groups, societies and organizations working in the same/similar area.
 - To help IEEE-IMS to expand its potentials, and increase attention as the professional home to the instrumentation and measurement experts and engineers worldwide.
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Comments/Suggestions (max. 1000 char. Including spaces)

None

* Please add as many rows as needed