Dear Readers,

It is a real pleasure to introduce this first *Instrumentation & Measurement Magazine* issue that sums up activities for a selection of Technical Committees (TCs) belonging to the I&M Society. TCs coordinate technical activities in the field of Instrumentation and Measurement, in order to enable the osmosis between society members and the industrial community, leading to best practices exchange in the fields of education, research and promotion of new Standards. More details on the currently active TCs are available through the I&M Society’s website: [http://ieee-ims.org/TSAC](http://ieee-ims.org/TSAC).

Every year we will be proud to dedicate one issue of the *Magazine* to TC activity, counting on the magnificent leadership of the I&M Society Technical & Standards Activities Vice President. I would really thank all of the authors who contributed to the realization of this *Magazine* issue and give a special thanks to Prof. Ruqiang Yan and Prof. Marco Parvis for their precious support.

Enjoy your reading,
Bruno

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**Guest Editorial**

Marco Parvis, IMS VP of Technical Committees and Standards  
Ruqiang Yan, IMS Past VP of Technical Committees and Standards

Dear Readers,

Technical Committees are the Instrumentation and Measurement Society’s “Center of Expertise.” Beginning this year, our *IEEE Instrumentation & Measurement Magazine* will publish a special issue dedicated to introducing technical committees’ activities every year. The Instrumentation and Measurement Society currently has twenty-two Technical Committees, and
they have been distributed among different topical areas. In this issue we are going to give you
details on the work of seven different Technical Committees: TC-2 (Impedance Spectroscopy),
TC-10 (Waveform Generation, Measurement and Analysis), TC-13 (Wireless and
Telecommunications in Measurements), TC-19 (Imaging Measurement and Systems), TC-34
(Nanotechnology in Instrumentation and Measurements), TC-37 (Measurements and
Networking), and TC-41 (Traffic Enforcement Technologies).

Most of these TCs, like TC-2, TC-13, TC-34, TC-37, and TC-41, present their general
activity, while TC-10 is focused on their activity on Standard Development, and TC-19 presents
a specific sensor showing how the TC activity can help in this field.

We hope you enjoy this discussion and we really hope some of you will recognize your current
activity in some of the TCs and join the TCs! Should you wish to find a list of the active TCs, go
to http://ieee-ims.org/technical-committees. And of course, if you think a new TC should be
established, feel free to contact the Vice President Technical Activity (TSAC) with your
proposal!

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**Article Summaries**

**Impedance Spectroscopy: From Laboratory Instrumentation to Field Sensors**

(Summary)

Olfa Kanoun

The aim of the TC-2 Impedance Spectroscopy (IS) is to serve as a platform for scientists to
promote this method in measurement and sensor technology, to:

- Encourage research on subtopics and challenging topics related to IS,
- Promote and facilitate the exchange of knowledge between scientists,
- Organize events related to IS,
- Become an official consultative body for industry in the field of IS, and
- Promote new standards and guidelines.

The article includes descriptions on how the TC supports young engineers, promotes exchange in
the scientific community, and publishes to promote knowledge transfer and inform about latest
trends in this promising field, including electrochemical corrosion, bioimpedance spectroscopy
battery research, sensors, system design and signal processing.

The Chair of the TC-2 is Olfa Kanoun: olfa.kanoun@etit.tu-chemnitz.de.

*This text was taken from the article.*
The **Documentary Standards of the IEEE Technical Committee 10**

*(Summary)*

**Sergio Rapuano, John Jendzurski, Luca De Vito, Steven J. Tilden, William B. Boyer, and Nicholas G. Paulter, Jr.**


The Chair of TC-10 is Nicholas Paulter: nicholas.paulter@nist.gov.

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**TC-13—Wireless and Telecommunications in Measurements—in Action**

*(Summary)*

**Octavian Postolache and Octavia A. Dobre**

Characteristics such as flexibility, interoperability, and scalability of wireless and wired systems are key factors for the development of the digital society. In this framework, TC-13 members are working to provide solutions for the emerging field of telecommunications, with a focus on wireless communications (beyond 5G, Wi-Fi, satellite, unmanned aerial vehicles, as well as the co-existence of such systems), optical communications (fiberoptic based, optical wireless, and visible light) and underwater communications (acoustic and optical wireless). At the same time, TC-13 is developing important research work related to IoT ecosystem components, including the communication between sensors and instrumentation and the edge/fog/cloud computing.

The Co-Chairs of TC-13 are Octavia Dobre odobre@mun.ca and Octavian Postolache opostolache@lx.it.pt.
Polarimetric Dynamic Vision Sensor \(p(DVS)\) Principles (Summary)

Martin Nowak, Anthony Beninati, Nicolas Douard, and George C. Giakos

TC-19: Imaging Signals and Systems explores a variety of computer vision and visualization systems spanning from medical imaging to defense, industry, and consumer electronics. These imaging systems use statistical or sophisticated artificial algorithms and require the integration of several technological and computational disciplines, such as detector physics and phenomenology, calibration, metrology, data acquisition, data analysis, image processing, feature extraction, and classification. This article articulates the broad principles of bioinspired vision. These principles integrate human cognitive vision with biological vision properties, such as polarization of light. Second, the neuromorphic or retina vision principles are introduced. Special emphasis is paid on the unique properties of the event-based Dynamic Vision Sensors (DVS)s which operate asynchronously based on differential light intensity changes. Third, the principles of polarimetric Dynamic Vision Sensors \(p(DVS)\), accompanied by experimental study on the detection of rotating targets at different speeds, are introduced. At the end, feature extraction and classification of acquired images using a deep learning network are exposed.

The Chair of TC-19 is George Gaikos George.giakos@manhattan.edu.

This text was taken from the article.

Needing Measurements and Instrumentation within the Nanotechnology World: IEEE IMS TC-34 Experience (Summary)

Aimé Lay-Ekuakille

The goals of TC-34 are to establish, develop, promote and support cooperation among researchers, industry and academia involved in different fields of nanotechnology instrumentation and measurement. Its activities and industry partners are introduced in this review of recent activities, along with a description of its spinoff event called NANOflM which is a conference with an insight into the nanotechnology world. The first NANOflM was held in 2015 in Lecce, Italy.

The Chair of TC-34 is Aimé Lay-Ekuakille aime.lay.ekuakille@unisalento.it.

This text was taken from the article.
The Instrumentation and Measurement Society Technical Committee TC-37: Measurements and Networking
(Summary)
Domenico Capriglione

The TC-37 Measurements and Networking tries to promote the international cooperation and integration of researchers belonging to the IMS with ones coming from other areas of the telecommunication and information technologies. In particular, efforts are made to highlight the important contribution of a metrological approach within different areas of networking, looking also to emerging fields such as IoT, software defined radio, software defined networks, coexistence and interference problems in wireless networks, 5G systems, to cite a few. This general overview discusses how TC-37 is involved in collaborative work with other bodies in the networking world, supports working groups involved in the development of standards sponsored or co-sponsored by IMS, and maintains linkages with other IMS technical committees.

The Chair of TC-37 is Domenico Capriglione dcapriglione@unisa.it.

Overview of IEEE Technical Committee 41
(Summary)
John Jendzurski

This article provides an overview of TC-41–Traffic Enforcement Technologies, specifically highlighting two Project Authorization Requests (PAR)s associated with it. P2450–Standard for the Performance of Down-the-Road Radar Used in Traffic Speed Measurements was established to ensure that there are a well-defined set of specifications and test methods for the performance of down-the-road radar. P2452–Standard for the Performance of Lidar Used in Traffic Speed Measurements was established to ensure that there are a well-defined set of specifications and test methods for the performance of lidar.

The Chair of TC-41 is John Jendzurski john.jendzurski@nist.gov.