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Editorial to selected papers from the 2022 IMEKO TC11&TC24 Joint Conference

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Dear Readers,

This Special Issue collects the extended version of some of the contributions presented at the 2022 IMEKO TC11&TC24 Joint Conference, held in Dubrovnik (Croatia) from the 17th to the 19th of October 2022. This international conference gathered experts both from industry and academia, covering different topics from the field of 'Measurement in Testing, Inspection and Certification' (IMEKO TC11) and 'Chemical Measurements' (IMEKO TC24). Considering the wide interdisciplinarity of the two Technical Committees, many topics and metrological issues were addressed by the Conference participants. In the following, the published papers will be individually presented.

In the Technical Note 'Statements of conformity provided by laboratories', A. Čop [1] examines the approach presented in ILAC G8 and other pertinent literature about decision rules for statements of conformity to specifications or standards. This issue is of paramount importance for laboratories, which need to correctly take into account measurement uncertainty in order to properly reduce the risk of incorrect decisions.

The paper 'Evaluating chemometric strategies and machine learning approaches for a miniaturized near-infrared spectrometer in plastic waste classification' by C. Marchesi et al. [2] reports on a comparative study of different computational tools to categorize a data set derived from near Infra-Red measurements. The results showed a very good performance of the multivariate methods (such as Principal Components Analysis), which outperformed the investigated Machine Learning tools. These findings are of great interest for the applications related to plastic waste sorting and polymers recycling.

The contribution "Metrology infrastructure for radon metrology at the environmental level" by A. Röttger et. al. [3], presents results in the areas of novel ^{226}Ra standard sources with continuous controlled ^{222}Rn emanation rate, radon chambers aimed to create a reference radon atmosphere and a reference field for radon flux monitoring. The new infrastructure is capable of filling this gap in traceability. The achieved results make new calibration services, far beyond the state of art, possible.

The contribution "Decision-making on Establishment of Re-Calibration Intervals of Testing, Inspection or Certification Measurement Equipment by Data Science" by M. Cundeva-Blajer [4], is related to issues on decisions in conformity assessment, especially in testing, inspection, and certification (TIC). The paper conducts a survey of options for deployment of data science in the TIC decision making processes, based on conclusions with complementary usage of empirical "measurements" and the "data science", through a case study for determining the instrument calibration frequency, presenting a model to establish recalibration interval with reduced risk in the final decision delivery over the next re-calibration moment.

During the second Large Hadron Collider Long Shutdown, the Liquid Argon calorimeter of the ATLAS experiment at CERN has been upgraded with a new trigger readout electronics which provides digital information with higher granularity to the ATLAS trigger system as presented in "Power distribution board: Quality control, Quality Assurance and Testing" by A. Carbone et al. [5]. In particular the new LAr Trigger Digitizer Boards process and digitize the "Super Cells" (group of readout calorimeters cells) and send the processed data to the back-end electronics. The Power Distribution Board is a mezzanine board that provides the power distribution to the LTDB.

The paper 'Developments of interlaboratory comparisons on pressure measurements in the Philippines' by M. N. I. Salazar [6] presents the results from interlaboratory comparisons in pressure measurement in the Philippines. The initiative derived from an increasing demand in proving the competency of local calibration laboratories and it was successfully implemented, performing two interlaboratory comparisons 6 years apart.

An important case study is then reported in the article 'The experience gained from implementing an ISO 56000-based innovation management system', by T. Gueorguiev [7]. The Author presents the adoption of the ISO 56000 series of standards at the University of Ruse, in Bulgaria. As a result, significant improvement in the innovation management system was achieved, and the main initiatives are outlined in the paper.

We hope you will enjoy your reading.

Marija Cundeva-Blajer
Leonardo Iannucci
Guest Editors for the Special Issue

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