

NIST-SIM Engagement Technical Exchanges & Research Cooperation

Andrew Conn

**International and Academic Affairs
Office**

**National Institute of Standards and
Technology (NIST)**



SIM General Assembly
21 November 2024

How does NIST support cooperation with SIM partners?



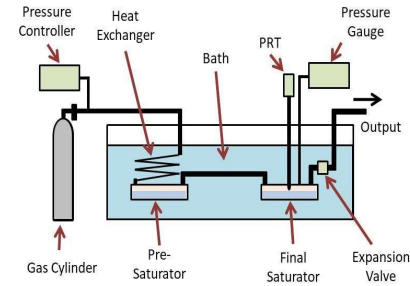
- **Guest Researcher Projects**
 - Visiting researchers from the NMI/DI community work together with NIST experts on projects of mutual interest
- **Subject-specific Training Events**
 - Events led by NIST staff focusing on specific measurement topics
- **Grant Funding**
 - Financial support to partner organizations to implement defined activities supporting the global metrology community
- **Special Projects (material and equipment)**
 - In unique cases, NIST can provide material support to enable projects addressing new and emerging needs

Guest Researchers NIST-SIM Engagemen t Opportunity



Alix Rodowa (NIST) & Mariela Silvia Giberti (INTI)

Material characterization for development of PFAS reference material in food matrices



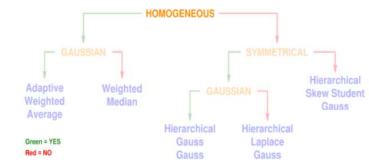
Christopher Meyer (NIST) & Carolina Herrera (LCM)
Development of High-Pressure Humidity Generator

Ami Powell (NIST) & Renato Reis Machado (INMETRO)
Determination of optimal values for the Rockwell hardness test method parameters and their corresponding sensitivity coefficients



Primary Standardizing Machine for Rockwell hardness scales

Antonio Possolo (NIST) & María Victoria Gelabert Gutiérrez (LATU)
Statistical methods for interlaboratory studies, proficiency tests and reference materials, focused on applications to electrochemistry.



Patrick Egan (NIST) & Johnny Jimenez-Jimenez (ICE)
Improving optical wavelength measurements



Fundamentals of Metrology Office of Weights and Measures (OWM)



14 - 18 April 2025

NIST Headquarters

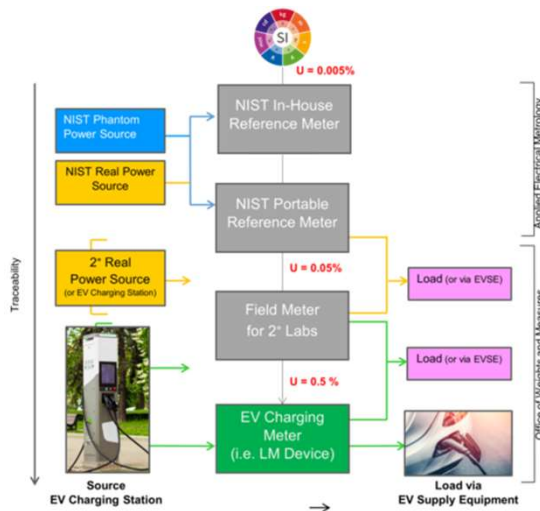
Gaithersburg, MD

IAAO and OWM will invite 12 SIM metrologists to participate; travel expenses to be covered by NIST. Application will be shared with NMI representatives in December.

Exercises and Lecture topics:

- Quality Assurance
- Rounding Expanded Uncertainties and Calibration Values
 - Assignment and Adjustment of Calibration Intervals for Laboratory Standards
- Ensuring Traceability
- Preparation of Calibration Certificates
- Assignment of Uncertainty
- Process Measurement Assurance Program

Metrology for Electric Vehicle Supply Equipment (EVSE)



- NIST's Applied Electrical Metrology Group and Office of Weights and Measures are spearheading efforts to develop metrological services and other technical resources for the EVSE sector.
- NIST will hold a multi-day workshop in 2025 (April/May, tentative) focusing for lab & field measurement methods and standards for the EVSE community.
- SIM NMIs/DIs interested in participating should contact Andrew Conn (andrew.conn@nist.gov); attendance will be limited.

Time and Frequency Time Measuremen t and Analysis Service (TMAS)



- NIST began constructing and distributing its TMAS systems to SIM labs in 2005
- Upgraded TMAS systems under construction by NIST's Time Realization and Distribution Group (Andrew Novick) will be distributed to select SIM labs presently contributing to the SIM Time Network
- The systems utilize dual-frequency GPS receivers, negating the need for interval counters, and achieve significantly lower uncertainties



2025 BIPM-SIM UTC Summer School



BIPM-UTC Summer School Format:

- **Intended audience:** Engineers, scientists, and technical staff at National Metrology Institutes and Designated Institutes who are participating in UTC operations and responsible for maintaining national time scales.
- The school will focus on skill development, knowledge sharing through mentorship, and practical experience:
 - Through e-learning resources, tutorial presentations, laboratory demonstrations, and Q&A breakout sessions, the workshops will ensure that participants acquire the necessary skills and background required for maintaining a

SAVE the date! BIPM-SIM UTC Summer School will be held the week prior to the EFTF-IFCS meeting in Queretaro, May 7-9, 2025.
Contact Tara Fortier (tara.fortier@bipm.org) for more information.



Tentative program:

Laboratory demonstrations:

- NIST TMAS technology
- GNSS receiver operation
- GNSS receiver calibration

Presentations:

- UTC Basics to Algorithms
- SIM lab best practices and innovative developments.

Hands-on learning:

- BIPM e-learning tools for clock data analysis and verification.

Terrestrial laser scanner (TLS) Workshop Dimensional Metrology Group



- TLS standards, calibration methods, error sources – presented jointly by NIST and CENAM staff
- Presentations from forensic experts on how TLS is used in their domain
- Event tentatively planned for May 2025 (virtual)

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Thank you!