

## Press Release

### IAPWS Executive Committee and Working Group Meetings

Helsinki, Finland

22 – 27 June 2025



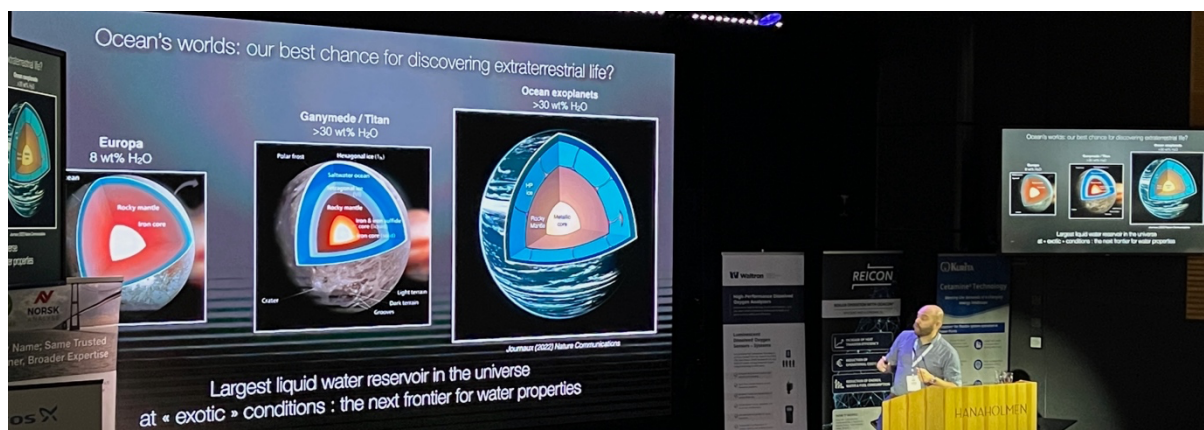
Between June 22<sup>nd</sup> and 27<sup>th</sup>, 96 scientists, engineers and 10 guests representing 20 countries met at the Hanaholmen Convention Centre in Helsinki, Finland for the annual meetings of the IAPWS Executive Committee and Working Groups. This series of meetings began in 1929 in London, UK with the purpose to connect scientists and researchers with the industry operators, engineers and managers who use their work. Collaboration and engagement across these varied groups provides guidance to the researchers on topical problems within industry and provides the engineers with the latest research results for direct application in their facilities.

IAPWS produces releases and guidelines on the recommended scientific formulations for physical and chemical properties of water in its various forms as well as technical guidance documents that are the concerted opinion of IAPWS members on the best operating practices for power plant chemistry. IAPWS also documents certified research needs that represent the opinion of experts in their respective fields that a research topic is greatly needed to fill a current gap in knowledge. All this information is freely available and can be found on the IAPWS website at [www.iapws.org](http://www.iapws.org).

On Wednesday June 25<sup>th</sup>, the 2025 IAPWS Symposium “Industrial Boilers, Flue Gas Condensate and Future Technologies” focused primarily upon new frontiers of industrial boiler systems including 11 presentations on topics ranging from flue gas condensate systems, electric boilers and future technologies of power-to-gas plants and small modular nuclear reactors. During the Symposium, the



annual Helmholtz award was presented to Dr. Baptiste Journaux (University of Washington, USA) who excited the audience with his talk “Planetary Science: The new frontier in water and aqueous solutions thermodynamic properties”. Dr. Journaux’s talk described the



development of new thermodynamic formulations, consistent with IAPWS releases, that describe the properties of ice phases at high pressures as may be found on moons and exoplanets within our solar system and beyond. The work culminated in the definition of a new thermodynamic point – the cenotectic – the invariant point occurring at the lowest temperature at which the liquid phase, for any value of concentration, pressure, or other thermodynamic forces acting on the system, remains in stable. Following the Symposium, the delegates were ferried for the dinner in the Banquet Hall of Tenaille von Fersen, on Suomenlinna, a World Heritage Site with a sea fortress where the annual IAPWS banquet was held. During the banquet, Dr. Andre Anderko was announced as a new IAPWS Honorary Fellow.

IAPWS, through the various working groups, produces releases and guidelines, technical guidance documents (TGD) and IAPWS certified research needs (ICRN). These can be found for free download on the IAPWS website at [www.iapws.org](http://www.iapws.org).

IAPWS Working Group Thermophysical Properties of Water and Steam (TPWS) discussed primarily the development of a new formulation of thermodynamic properties of ordinary water, replacing in future the currently valid IAPWS-95. IAPWS-95 provides an excellent representation of experimental data in most regions and it has found immense applications in power generation, geophysics, physical chemistry, biochemistry, etc. However, new data, new theoretical knowledge, and new applications require a complete re-design of the formulation. Preliminary work, including a critical revision of existing data, was started in collaboration of the National Institute of Standards and Technology (NIST) in Boulder, USA, Institute of Thermomechanics in Prague, Czechia, and Ruhr Universität Bochum, Germany. TPWS also investigated the possibility of updating IAPWS recommendations for the surface tension of ordinary water and for boundaries of liquid and solid phases of water (ices).

Within the Subcommittee for Seawater, an agreement has been reached on how to continue the work of the subcommittee within the framework of a collaboration with TPWS working group. The subcommittee will gather scopes to match the needs of industries and those of the oceanographer community and will help organize a 2026 workshop on sensors adopted in seawater applications.

The Industrial Requirements and Solutions Working Group (IRS) discussed the proposal for a new Industrial Formulation for the properties of water and steam using the Spline-Based Table Look-up method (SBTL) and reported on the evaluation of SBTL property functions based on IAPWS-IF97 and IAPWS-95. According to the presented results, the key decisions on future paths have been met. It was proposed to establish a task group aiming at the evaluating the results to support the draft release at the IAPWS meeting in 2026, leading to a new standard for industrial formulation for fast calculation. A draft of the white paper on “accurate estimation of low sulfur dew point in GTCC for efficient operation avoiding acid corrosion” has been reviewed and the formula is to be further revised to adjust the model to the data and further survey conducted to aim for new IAPWS guideline.

The Physical Chemistry of Aqueous Systems (PCAS) working group showcased significant progress in water chemistry research this year, with particularly active discussions on film forming substances (FFS). Key developments included high-resolution monitoring techniques for amine film assembly on low-roughness metal surfaces, an update on the international collaboration examining the effects of film forming amines (FFA) on flow-accelerated corrosion and their relationship to film structure, and in-situ electrochemical measurements

demonstrating the protective effects of film forming substances against corrosion. Additionally, the working group engaged in valuable discussions on advanced characterization methods using X-ray CT to assess localized corrosion rates in steels under high-temperature, high-pressure conditions, as well as modeling approaches for hydrodynamic cavitation in water at elevated temperatures. These research efforts continue to advance our fundamental understanding of aqueous system chemistry and its practical applications in industrial water treatment and corrosion mitigation.

The Power Cycle Chemistry (PCC) working group had a great week that saw an increase in attendance with detailed and robust technical discussions on emerging technologies and applications. Highlights included summary presentations of recently completed and ongoing International Collaboration Projects on the influence of contaminant concentration on boiler steel corrosion and detailed studies on surface interactions with film forming amines. New insights on oxides formed in supercritical units were presented based upon state-of-the-art electron microscopy, focused ion-beam (FIB) and STEM analyses. This year, the PCC celebrated an enhanced social media presence with updated webpages, a LinkedIn feed and the launch of PCC Webinars and starting to plan this year's activities. Finally, the PCC has updated their Priority Listing for future activities that include topics around cycling and fast-start plants, electrode boilers, training and knowledge transfer and film forming substances.

IAPWS welcomes scientists and engineers with interest in the thermophysical properties of water, steam, and aqueous systems and in the application of such information to industrial uses. The next IAPWS meeting will be held in Bristol, UK in July 2026. Further information on meetings can be found at the IAPWS website ([www.iapws.org](http://www.iapws.org)) as it becomes available. People interested in IAPWS documents and activities should contact the chairman of their IAPWS National Committee (see website) or the IAPWS Executive Secretary, Dr. Daniel Friend, [dg.friend@iapws.org](mailto:dg.friend@iapws.org). People do not need to be citizens or residents of member countries to participate.



**Delegates from the IAPWS Symposium, Executive Committee and Working Groups  
Hanaholmen Convention Centre, Helsinki, Finland – June 25, 2025**