PRESS RELEASE

INTERNATIONAL ASSOCIATION FOR THE PROPERTIES OF WATER AND STEAM

2016 ANNUAL MEETING, DRESDEN, GERMANY

Continuing a series of conferences that began in 1929 in London, 90 scientists and engineers from 18 different countries, along with 11 accompanying persons, attended the annual meeting of the International Association for the Properties of Water and Steam (IAPWS). The German National Committee of IAPWS hosted the meeting between 11th and 16th September 2016 at the Steigenberger Hotel de Saxe in Dresden, Germany. The highlights of the IAPWS working group sessions and other proceedings of the Executive Committee are summarized in this release.

The primary purpose of the annual IAPWS meeting is to connect researchers and scientists with the engineers who use their information. This information exchange provides the researchers with guidance on topical problems within industry and provides the engineers with the latest research results. Areas of application include power cycle chemistry, high temperature aqueous technologies applicable to steam cycles and fuel cells, the use of high temperature water and supercritical steam in chemical and metallurgical processes, supercritical synthesis of new materials and destruction of toxic wastes, hydrothermal geochemistry, hydrometallurgy, oceanography, power cycles with CO_2 capture and storage systems and combined heat and power systems including district heating.

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 best operating practices for power plant chemistry. IAPWS also documents certified research needs that represent the opinion of experts in their respective fields that research on a particular subject is greatly needed to fill a current gap in knowledge. All of this information is freely available and can be found on the IAPWS website at **www.iapws.org**.

The Working Group on Thermophysical Properties of Water and Steam (TPWS) discussed interesting new results on thermophysical properties of metastable liquid water – water cooled below the freezing temperature. Some of this work has led to a new IAPWS Guideline on properties in this region, and related work will improve the description of the melting curves of ice, especially at high pressures. New data,

most of it obtained in projects involving TPWS members, is leading to improved formulations for the surface tension of water and for the thermodynamic properties of heavy water; both are expected to be completed in 2017.

The Industrial Requirements and Solutions (IRS) working group discussed reports on successful applications of the “IAPWS Guideline on the Fast Calculation of Steam and Water Properties with the Spline-Based Table Look-Up Method (SBTL)” released last year. The working group also discussed further areas of interest to industry besides wet steam properties of practical interest (direct wetness measurement, guidance on transport properties in wet steam). New topics in the areas of freezing phenomena, properties of slurry ice, etc. were identified and detailed requirements for these areas will be examined in the upcoming year.

The Subcommittee on Seawater continued working towards the traceability of marine measurements, especially for salinity. A number of talks were presented on salinity and density measurements, and it was resolved that an international coalition should work towards identifying outstanding issues with density measurements in Standard Seawater. Work is also actively proceeding to define the electrical conductivity of seawater.

In the meetings of the Power Cycle Chemistry (PCC) working group, two new technical guidance documents (TGDs) were approved for release: “Application of Film Forming Amines in Fossil, Combined Cycle and Biomass Plants” and “HRSG High Pressure Evaporator Sampling for Internal Deposit Identification and Determining the Need to Chemical Clean”. Additionally, the PCC working group discussed development of new TGDs involving demineralized water requirements and the use of film forming amines in nuclear plants, and are developing several whitepapers including corrosion product sampling for plants on flexible operation and minimizing air in-leakage into steam-water cycles. PCC also identified a significant step forward in the understanding of the behaviour of Al in steam cycle circuits.

IAPWS produces Certified Research Needs (ICRNs) as guidance for funding agencies and as an aid to people doing research in defining important research. To date, these have covered a variety of areas related to the properties of water and steam, seawater and the chemistry of power plants. A list of currently active ICRNs and closing statements on the progress made for those that have expired can be found on the IAPWS website.

A symposium entitled “Steam, Water and Aqueous Mixtures in Energy and Process Engineering” was held on Wednesday 14th September 2016**.** The symposium included several presentations focused on transformational change in the energy sector to meet global CO_2 reduction targets, thermodynamic properties of water, water-CO_2 mixtures, water-alcohol mixtures and the use of water as a refrigerant. The IAPWS Helmholtz award lecture is traditionally the cornerstone of the IAPWS Symposium. This year’s award winner was Dr. Frédéric Caupin from the University of Lyon, France. His work and the topic of his presentation surround the Equation of State of metastable water at negative pressure. Also presenting at this year’s Symposium was Dr. Vincent Holten, the 2015 Helmholtz award winner who was unable to attend the meeting last year. The IAPWS Helmholtz award is given annually to developing or early career scientists and engineers who are working in a

field of interest to IAPWS. It includes an opportunity to attend the annual IAPWS meeting and to present the Helmholtz Award lecture.

The IAPWS Honorary Fellow award was conferred during the meeting banquet, which was held in the ballroom of the Hilton-Dresden Hotel. The Honorary Fellow award is given in recognition of many years of contribution to the Association. At the 2016 meeting, the recipient of the IAPWS Honorary Fellow award was Dr. Allan Harvey from the National Institute of Standards and Technology in the United States in recognition for long-standing efforts in formulating and improving IAPWS releases as member and Chair of the Working Group Thermophysical Properties of Water and Steam, Chair of the Editorial Committee and, for outstanding scientific work in the field of fluids and aqueous systems, including ab-initio calculation of molecular interactions.

This year, IAPWS welcomed New Zealand as a new full member of the association and formally approved Egypt as an associate member. 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 in Kyoto, Japan from 27th August – 1st September 2017. Preparations are also underway for the 17th International Conference on the Properties of Water and Steam (ICPWS) that will be held between 2nd – 7th September, 2018 in Prague, Czech Republic. Further information on meetings can be found at the IAPWS website (www.iapws.org) as it becomes available.

People interested in IAPWS documents and activities should contact the Chairs of their IAPWS National Committee (see the IAPWS website for contact details) or contact the IAPWS Executive Secretary, Dr. R. Barry Dooley, bdooley@structint.com. People do not need to be citizens or residents of member countries to participate in IAPWS activities.

Group photo of the participants of the 2016 IAPWS meeting, Dresden, Germany.