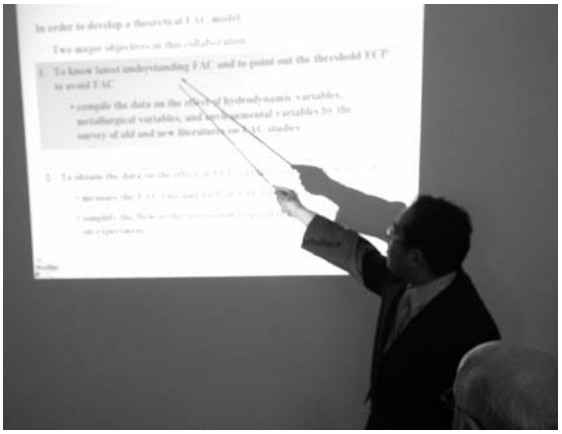
Press Release for IAPWS Annual Meeting on Santorini Island, Greece
July 2005

Sixty-two scientists and engineers from twelve countries attended the annual meetings of the International Association for the Properties of Water and Steam (IAPWS), July 3-8, 2005 on Santorini Island, Greece. IAPWS provides standards for steam and water properties and serves as a forum where engineers from the power industry and academic scientists can communicate problems and solutions to each other. IAPWS has traditionally concentrated on the science underlying the thermodynamics and chemistry in steam power plants, but is broadening into other aspects of power generation and high-temperature aqueous systems as well as seawater and ice. Discussions range from puzzling power plant chemistry results to reports on solutions to such problems to practical implications of fundamental theory and molecular modeling of thermodynamic and transport properties.



Young scientist Dr. Satoh presents his report on an international collaboration on flow assisted corrosion. Dr. Satoh traveled from Japan to Canada to conduct his investigation.

Highlights of the 2005 meeting include plans to develop guidance notes on water and steam sampling in power plants and on ion exchange resin. These subjects are well known to some of the participants in IAPWS, but the information is disjointed and not widely disseminated. A plan to understand the corrosion and catalysis at metal surfaces related to ultrasupercritical power plants was initiated. It includes a symposium on "Interfacial Chemistry and Electrochemistry in High-Temperature Fluids" to be conducted at an electrochemical conference. (Links will appear on the IAPWS website when the symposium is organized.) Reports on chemistry in nuclear steam cycles included the use of methanol to suppress radiolysis of water in boiling water reactor systems.

Simulation of thermophysical properties of water and aqueous systems continues to be an interest of IAPWS. The IAPWS Helmholtz Award lecture this year, "The Path of Water: A Molecular Perspective of Transport in Membranes and Glasses," by Valeria Molinero of the California Institute of Technology, provided additional insights into ways to understand phenomena that occur in experimentally difficult regions. The IAPWS Helmholtz award is given to a young scientist who is working in a field of interest to IAPWS. It includes a trip to the IAPWS meeting to present a paper.

IAPWS is preparing a Databook, with seven chapters: Phase equilibria, pVTX, Calorimetry, Potentiometry, Electrical conductivity, Thermal conductivity, Viscosity. This book evaluates various high-temperature techniques and collects and summarizes all of the relevant experimental data available in the literature with emphasis on results obtained above 200°C.

This year IAPWS completed the set of supplementary equations associated with the IF-97 standard used worldwide in industrial power generation applications. A supplementary release enables the very fast calculation of the specific volume (or density) of water when the pressure and temperature are known, over a broad region around the critical point of water. New documents which will describe the viscosity of water and the thermodynamic properties of ice are now under review for possible adoption as IAPWS standards at its next meeting. Work is also underway or planned on the properties of moist air to assist in technologies related to humid air turbines, and on salt water to meet the needs of the oceanographic community, as well as for applications in power generation cooling systems. A continuing topic is methods of power generation in the future.

A joint project on irreversible thermodynamics of fuel cells membrane transport will send Ondrej Mican, a Czech student from the Institute of Thermomechanics, Prague to the Pennsylvania State University, United States for 5 months.

The next IAPWS meeting will be in Witney, Oxfordshire, United Kingdom, September 3-8, 2006. Details of the meeting will be available through links from the IAPWS website at www.iapws.org. Minutes of the 2005 meeting will appear on the website shortly. The meetings are open to anybody interested in the general topics of IAPWS. The proceedings from the 14th International Conference on Properties of Water and Steam, *Water, Steam, and Aqueous Solutions for Electric Power*, have been released (see link on "Meetings" section of www.iapws.org). The 15th International Conference on Properties of Water and Steam is planned for Berlin, Germany in 2008.

People interested in IAPWS documents and activities should contact the chairman of their IAPWS National Committee (see "National Contacts" section of www.iapws.org) or the IAPWS Executive Secretary, Dr. Barry Dooley, EPRI, 1300 West W.T. Harris Blvd., Charlotte, North Carolina 28262, USA.