

INTERNATIONAL COLLABORATION - YOUNG SCIENTISTS FROM THE CZECH REPUBLIC

Molecular modeling of impurities in turbine steam

Young Scientist: Ivo Jiříček, Institute of Chemical Technology, Prague Institute of Power Engineering
Conducted at: Jonas Inc. Wilmington, DE, USA
Sponsors: Otakar Jonas, Jonas Inc. Wilmington, DE, USA
Dr. O. Šifner, Institute of Thermomechanics AS CR, CR
Period: 1995

Investigation of the volatile species effect on the formation of the early condensate

Young Scientist: Pavel Sopuch, Institute of Thermomechanics AS CR, Prague
Conducted at: University of Genova
Sponsors: Dr. F. Signon, ENEL/SRI Milano, Italy
Prof. A. Servida, University of Genova, Italy,
Dr. O. Šifner, Institute of Thermomechanics AS CR, CR
Period: 1995 - 1996

Testing and fine-tuning of a new type of heat capacity calorimeter for measurements of aqueous solutions at superambient temperatures

Young Scientist: Lubomir Hnědkovský, Institute of Chemical Technology, Prague, Institute of Physical Chemistry
Conducted at: University of Delaware, U.S.A
Sponsors: Dr. O. Šifner, Institute of Thermomechanics AS CR, CR
Dr. V. Majer, University Blaise Pascal, France,
Dr. R. H. Wood, University of Delaware, U.S.A.
Period: 1996 - 1998

Correlation and prediction of standard thermodynamic properties of aqueous solutes over a wide range of temperatures and pressures

Young Scientist: Josef Sedlbauer, Technical University Liberec, CR, Dpt. of Chemistry
Conducted at: Blaise Pascal University, France
Sponsors: J. Kadrnožka Inst. of Power Engng., Technical University Brno, CR
Dr. V. Majer, Laboratory of Thermodynamics and Chemical Engineering,
University Blaise Pascal, France
Period: 1999 - 2001

Thermodynamics of binary homogeneous nucleation in superheated steam

Young Scientist: Tomáš Němec, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University of Prague
Conducted at: Oak Ridge National Laboratory, Chemical and Analytical Science Division, Oak Ridge, TN, USA
Sponsors: Dr.D.A. Palmer, Oak Ridge National Laboratory
Prof. F. Marsik, DrSc, Inst. of Thermomechanics, Acad. Sci. CR.
Period: 2003

Irreversible thermodynamics of fuel cells membrane transport

Young Scientist: Ondřej Mičan, PhD student, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University
Conducted at: The Pennsylvania State University, Energy and Geo-Environmental Engineering
Sponsors: Prof. ing. František Maršík, DrSc. Institute of Thermomechanics CAS, Department of Thermodynamics, Prof. Serguei Lvov, Pennsylvania State University, Energy and Geo Environmental Engineering
Period: Planed 5 months with Prof.. Lvov in his Laboratory from February 2006

Predictive Scheme for Standard Thermodynamic Properties of Aqueous Substituted Benzenes over a Wide Range of Temperatures and Pressures

Young Scientist: Jana Ehlerová, PhD Student, Dept. of Chemistry, Technical University of Liberec, Czech Republic

Conducted at: The Univ. of Guelph, Ontario, Canada and Universite Blais Pascal, Clermont-Ferrand, France

Sponsors: Prof. Peter R. Tremaine, Dept. of Chemistry and Biochemistry, Univ. of Guelph, Ontario, Canada
Prof. Josef Sedlbauer, Dept. of Chemistry, Technical University of Liberec, Czech Republic

Period: Planed 3 to 4 months in a single stay starting in the fall of 2006
The purpose of this visit will be collaboration with Prof. Tremaine on experimental determinations of the ionization constant of nitrophenols in a wide range of conditions using high-temperature UV-VIS spectroscopy.

Equilibrium Constants and Speciation of Aqueous Transition Metal Chlorocomplexes over a Wide Range of Temperatures and Pressure

Young Scientist: Jitka Felcmanová, PhD. student*, Dept. of Chemistry, Technical University of Liberec, Czech Republic

*With regard to the interruption of the Ph.D. study of Ing. Felcmanova by the end of 2007, after the agreement with Prof. Tremaine, she has been substituted by Ing. Ehlerova. This fact Prof. Safarik notified to the IAPWS Secretary.

Conducted at: The Univ. of Guelph, Ontario, Canada

Sponsors: Prof. Peter R. Tremaine, Dept. of Chemistry and Biochemistry, Univ. of Guelph, Ontario, Canada
Assoc. Prof. Josef Šedlbauer, Dept. of Chemistry, Technical University of Liberec, Czech Republic

Period: Planed 10 months 2008. The purpose of the project is to measure and model stepwise formation constants for the copper(II) chloride complexes at temperatures from 75 to 250°C. The low end of this range will provide thermochemical data needed for process design and optimization of the reactor and heat exchanger. The higher temperature data are of fundamental value for steam generator design, both for the SCWR and more conventional power stations.

Thermophysical Properties of supercooled water

Young Scientist: Jana Kalová, PhD. student, Institute of Technology and Business, České Budějovice, and University of West Bohemia in Pilsen, Czech Republic

Conducted at: University of Maryland, Institute of Physical Sciences and Technology, Department of Chemical Engineering

Sponsors: Prof. Mikail A. Anisimov: Institute of Physical Sciences and Technology, Department of Chemical Engineering, University of Maryland, College Park, MD 20742, USA
Prof. Ing. Radim Mareš, CSc., Faculty of Mechanical Engineering, Department of Power System Engineering, University of West Bohemia, Pilsen Czech Republic

Period: Planed 6 months 2010. The purpose of the project is to recalculate coefficients in the scaled equation and to compare gained thermophysical properties with extrapolated values from IAPWS 95 formulation. Total Cost US\$ 18000, subsistence for 6 month Grant US\$ 15000 and round trip US\$ 3000.

Development of Thermodynamic Models for Hydrates in Water-Carbon Dioxide Mixture

Young Scientist: Dr. Václav Vinš, Department of Thermodynamics, Institute of Thermomechanics AS CR, v.v.i., Dolejškova 5, 182 00 Prague 8, Czech Republic

Conducted at: Ruhr-Universität in Bochum

Sponsors: Prof. Dr. Roland Span, Lehrstuhl für Thermodynamik, Fakultät für Maschinenbau, Ruhr-Universität Bochum, Universitätsstr. 150, 44780 Bochum, Germany

Period: 6 months at Ruhr-Universität in Bochum in a single stay starting in February 2011.

The proposed project is closely connected with investigation of water mixtures, metastable water, CO₂ separation, and nucleation in natural gas. Subsistence for 6 months: IAPWS Young Scientist Grant 12.000 €.