

## 内外情報

### ★高温における固体の熱的性質に関する第4回ヨーロッパ会議

1968年以来、2年ごとに開催されて来た上記会議がフランスのオルレアンで、9月4日～6日の間開催される。プログラムは、熱容量・熱伝導度・状態式・相転移・固体の照射効果など、高温固体の諸問題についての理論・実験などの報告（3月1日で申込〆切済）のほかに、「高温における金属とセラミックスの熱力学的性質（Prof. M. Hoch, シンシナチ大学）」など数件の特別講演も予定されている。

連絡は下記まで：

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### ★第6回実験熱力学会議

上記会議が、4月3日～4月5日、イギリスのUniversity of Leedsで開かれる。宿泊設備の関係で、出席者は200名に限られる。世話人は、Dr. G. Pilcher, Department

of Chemistry, University of Manchester,  
Manchester M13 9PL.

### ★フランス熱測定および熱分析会議

AFCAT（フランス熱測定及び熱分析学会）の上記年会は、5月9～10の両日、フランスのUniversity of Rennesで開かれる。内容は、以下の4セッションよりなる。1および2：熱測定および熱分析における較正…異なる較正法とその信頼性についての提案・討論・3：熱測定および熱分析による相変化に関するデータの決定について…直接法（DTA, DSC）と間接法（エンタルピー、熱容量、溶解熱等の測定）。4：一般の熱測定および熱分析。

通信先：J. P. Auffredic または C. Carel,  
Secrétariat des Journées de Calorimétrie  
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### ★第3回国際化学熱力学学会プログラム

(Third International Conference on Chemical Thermodynamics 1973年9月1日～9月7日)

#### I. PLENARY LECTURES

E. U. Franck, Karlsruhe, BRD	Polar and Ionic Fluids at High Temperatures and Pressures
O. Kubaschewski, Teddington, England	Phase Equilibria in Condensed Systems
J. S. Rowlinson, London, England	Equilibria between Fluid Phases in Mixtures of Non-Electrolytes
H. Sackmann, Halle, DDR	Liquid Crystals
I. Wadsö, Lund, Sweden	Biochemical Thermochemistry
E. F. Westrum, Jr., Ann Arbor, USA	Calorimetry of Phase and Ordering Transitions

#### DETAILED SCHEDULE OF THE CONFERENCE ON CHEMICAL THERMODYNAMICS

##### Section 1:

Corundum Enthalpy Measurements Near the Freezing Point, V. D. Tarasov and V. Ya. Chekhovskoi

The High Temperature Enthalpy of Uranium Monocarbide and Plutonium Monocarbide, F. L. Oetting

Determination of the Enthalpy of Liquid Metals with a Liquid Argon Calorimeter, H. P. Stephens and L. S. Nelson

High Temperature Calorimeter—1500°C, J. Mercier

Mesures Calorimétriques des Enthalpies de Sublimation des Trois Acides Aminobenzoïques, R. Sabbah, R. Chastel et M. Laffite

A New High-Pressure Recycle Flow Calorimetric Facility, Takaya Miyazaki and J. E. Powers

New Concepts in Design and Applications of Flow Microcalorimeters, P. Picker

A Sorption Microcalorimeter, Instrument and Applications, A. Johansson and R. Eckart

Microcalorimeter for Heat of Chemisorption Measurements in Higher Temperature, S. Randzio and W. Zielenkiewicz

A Micro Combustion Calorimeter and an Ampoule Technique for 5 to 10 mg Samples, M. Mansson

Method of Differences in the Enthalpies of Transfer in the Investigations of Thermochemistry of Solutions of Alkali Halides in Dimethylsulfoxide and Dimethylformamide, A. F. Vorob'ev, N. M. Privalova and B. G. Kostyuk

# 熱測定

A DSC Method to Determine Stored Energy Release during Recrystallization Progress in Deformed Metals, A. Lucci, G. Riantino, M. Tamanini and G. Venturello

Heat Capacity of Ethane and of an Equimolar Mixture of Ethane and Propylene, K. Bier, G. Ernst, J. Kunze and G. Maurer

The Heats of Vaporization and Heat of Mixing Measurement on a New Type of Calorimeter, V. Svoboda, F. Vesely, V. Hynek, J. Pick and R. Holub

On Some Problems of Vaporization Thermodynamics for Low-Volatility Organic Compounds, V. S. Romanov, E. A. Miroshnichenko and Yu. A. Lebedev Benzoic Acid as a Standard Substance for Low-Temperature Calorimetry, N. P. Rybkin, M. P. Orlova and A. K. Baranuk

Comparison of Applicability of Various Cryometric Methods for Determination of Purity, Z. Bugajewski, A. Bylicki, S. Midanowski and M. Rogalski An Automatic High Sensitivity A.C. Ratiometer for Resistance Thermometry, R. M. Dixon

Dynamic Properties of Diathermic Calorimeters, E. Margas and W. Zielenkiewicz

New Method of Determining Thermal Effects in Dialthermic Calorimeter, W. Zielenkiewicz and E. Margas

Statistische Versorgung des Experiments in der Kalorimetrie, O. P. Mchedlov-Petrosjan, W. Ju. Dubnitski and W. L. Chernyavski

Recherche de la Thermogénèse d'un Phénomène par Calorimétrie à Flux, J. P. Dubès, M. Barrès, R. Romanetti, H. Tachoire et C. Zahra

## Section 2:

Halogen Thermochemistry, P. Gross

The Heats of Formation of Metal Nitrides and Silicides by Fluorine Bomb Calorimetry, J. L. Wood, G. P. Adams, J. Mukerji and J. L. Margrave Heats of Formation of Crystalline Derivatives of  $B_{10}C_2H_{12}$  Carboranes, G. L. Gal'chenko

The Enthalpies of Formation of Some Gadolinium Carbides, E. J. Huber, Jr., C. E. Holley, Jr. and N. H. Krikorian

Method of Explosive Calorimetric Combustion. Enthalpies of Formation of some Organosilicon Compounds, S. N. Hajiev, G. G. Nurullayev and M. J. Agarunov

Enthalpies of Combustion and Formation of 3,5-Diethylbenzoic Acid and 3,5-Di-*t*-Butylbenzoic Acid, M. Colomina, M. V. Roux and C. Turrian

Thermochemistry and Reactivity in Bridged-Ring Systems, W. V. Steele

Discussion: Enthalpies of Gallium and Indium Monochalcogenides Formation, T. Kh. Azizov, I. Ya. Aliev, A. S. Abbasov and K. A. Sharifov

The Standard Enthalpy of Formation of Dimethyl Oxalate, M. E. Anthony, A. Finch and M. Stephens

Standard Reference Materials for Combustion Calorimetry, G. T. Armstrong and W. H. Johnson

High Temperature Microcalorimetric Direct Measurements of  $H_f^{\circ}$  in Cerium Oxides from  $O/Ce = 1.5$  to  $O/Ce = 2$ , J. Campserveux and P. Gerdanian

Thermochemistry of Aluminium  $\beta$ -Diketonates and Al-O Bond Energies, R. J. Irving and M. A. V. Ribeiro da Silva

The Enthalpy of Formation of Aqueous Chlorate and Perchlorate Ions, M. E. Efimov and V. A. Medvedev

Free Energy-, Enthalpy- and Entropy Changes Accompanying the Formation of the  $Ag(I)$  Complexes with N-Methyl Substituted Ethylenediamines, L. C. Van Poucke

Thermodynamics of Liquid-Liquid Distribution Reactions. II. The Lithium Bromide-Water-2-Ethylhexan-1-ol System, Y. Marcus

## Section 3:

An Equation of State for Xenon from 161 to 423 K at Pressures from 0 to 3000 Bar Including the Vicinity of the Critical Point, J. Juza and O. Sifner

Discussion: Evaluation of Antoine Equation Constants, D. Wyryzkowska-Stankiewicz, A. Szafrański and K. Rapacka

Enthalpy and Entropy of Fusion of Several Heterocyclic Oligomers of the 1-Ethyl-Resistant Polymers, Hirotaka Kambe, Itaru Mita and Rikio Yokota

Discussion: Investigation of the True Thermal Capacity of Diphenyl Derivatives at Low Temperatures, M. F. Nagiev, K. A. Karashly, Kh. I. Geidarov and O. I. Djafarov

Discussion: Investigation of Internal Rotation in Crystalline Fluoro-Chloroethanes and Propanes by Low-Temperature Calorimetry, V. P. Kolesov, V. N. Vorob'ev and E. A. Sarzhina

Measurements of the Isochoric Specific Heat Capacity near the Critical Point and in the Metastable Region of CO<sub>2</sub> by a Heat Flow Calorimeter, J. Straub

Representation of the Thermodynamic Properties of Liquids by Continuous Equations of State, A. J. B. Cruickshank, D. E. Goodwin, R. N. Mercer and J. A. Terry

Existence of Plural Glass Transition Points in Single Compound Revealed by Calorimetric Method, O. Haida, H. Suga and Syuzo Seki

Critical Point Non-Smoothness in the Coexistence Curves of Specific Volume and Free Energy, J. W. Bursik

The Melting Transition of the Rare Gas Elements and Metals. The Role of the So-Called Communal Entropy in Promoting Isothermal Melting, J. G. Aston

Discussion: The Heat Capacity of Liquid Bismuth, C. R. Brooks

The Solid-Fluid Phase Transition: A Cluster-Diagrammatic Approach, C. A. Croxton

Lattice Theories of Water, G. M. Bell

Monte Carlo Calculations of the Structure of Liquid Water, R. O. Watts

## Section 4:

Simple Analytic Equations of State for Mixtures, R. L. Scott

Intermolecular Interactions and Excess Thermodynamic Properties of Argon-Krypton and Krypton-Xenon Mixtures, J. K. Lee, D. Henderson and J. A. Barker

Prediction of the Thermodynamic Functions of Mixing of Liquids using Continuous Equations of State, A. J. B. Cruickshank, D. E. Goodwin, R. N. Mercer and J. A. Terry

Excess Properties of Binary Liquid Mixtures of Non-Associating Substances Differing in Size and Interaction Energy from Statistical Thermodynamics, J.-L. Gustin and H. Renon

Interactions of Molecules Represented by Graphs, W. Brostow

Discussion: Theoretical Treatment of Partially Miscible Liquids by Means of Equilibrium Models, F. Becker and M. Kiefer

Discussion: Thermodynamic Properties of Simple Liquids and their Mixtures, M. L. Huggins

Discussion: Application of Corresponding States Theories of Mixtures of Compressed Gases in Range of Pressure and Temperatures, B. Małeksińska and J. Stecki

Discussion: First Order Perturbation Theory of Mixtures, T. Boublík

Thermodynamics of Binary Fluid Mixtures of  $C(CH_3)_4$ ,  $Si(CH_3)_4$ , and  $Sn(CH_3)_4$ , M. L. McGlashan

Thermodynamics of Mixtures of Cycloalkanes, M. B. Ewing and K. N. Marsh

Thermodynamics of Liquid Mixtures of Xenon and Hydrogen Chloride, J. C. G. Calada, A. F. Kozdon, P. J. Morris, M. Nunes da Ponte, L. A. K. Staveley and L. A. Woolf

Free Excess Enthalpies of Binary Systems with Unsaturated Hydrocarbons, H. J. Bittrich, H. J. Gumpert and W. Schille

Discussion: Heats of Mixing of Long-Chain Tertiary Alkylamines with Benzene, A. S. Kertes and F. Grauer

Discussion: Thermodynamics of Liquid Mixtures of Chain Molecules Containing Dimethylsiloxanes, I. A. McLure, P. A. Sadler, E. Dickinson and A. J. Petty

Discussion: Infinite-Dilution Activity Coefficients of Unsaturated Normal Hydrocarbons ( $C_5$  and  $C_6$ ) in n-Octadecane, n-Octadec-1-ene, n-Hexadecane and Hexadec-1-ene, T. M. Letcher and F. Marsicanu

Thermodynamics and Phase Behaviour of Liquid Mixtures at Low Temperatures and High Pressure, K. Peter and G. M. Schneider

Excess Enthalpies of Binary Fluid Mixtures at High Pressures and Low Temperatures; The System Nitrogen + Methane, C. J. Wormold and K. L. Lewis

Discussion: Conditions for "Gas-Gas Immiscibility", R. L. Scott

Discussion: "One-fluid" Theories of High-Pressure Phase Equilibria in Fluid Mixtures, M. L. McGlashan, K. Stead and Christina Warr

The Solubility of Gases in Liquids, VI. Solubility of  $N_2$ ,  $O_2$ ,  $CO$ ,  $CO_2$ ,  $CH_4$  and  $CF_4$  in Methylcyclohexane and Toluene, L. R. Field, E. Wilhelm and R. Battino

The Solubility of Mercury in Polar Gases, H. S. Rosenberg and W. B. Key

## Section 5:

The Barker Theory of Cooperative Effects as Applied to Dilute Solutions, J. Stecki and J. Dudowicz

Correlation of n-Alcohol Association Constants and Parameters of Physical Interaction Contributions in a Series of Binary Systems formed by Homologous n-Alcohols with Inert Solvents, A. Treszczanowicz, T. Treszczanowicz and M. Rogalski

Comparison of the Methods for Estimating Physical and Chemical Contributions to Thermodynamic Excess Functions of Non-Athermal Associated Models of Binary Systems: n-Alcohol + Aliphatic Hydrocarbon, A. Treszczanowicz and T. Treszczanowicz

Evaluation of Heats of Mixing of Binary Liquid Systems with Self-Association via  $C - H \dots O$  Bonds, M. Kiefer and F. Becker

Thermodynamics of Dilute Solutions of Alcohols in Non-Polar Solvents, R. H. Stokes and K. N. Marsh

An Improved Group Solution Model for the Prediction of Excess Free Energies of Liquid Mixtures, M. Ron and G. A. Ratcliff

Thermodynamic Properties of Some Cycloalkane + Cycloalkanol Systems II, G. C. Benson, S. C. Anand and Osamu Kiyohara

Excess Thermodynamic Functions and Association in Alcohol-Perfluorobenzene Solutions, N. A. Smirnova, A. G. Morachevskii and M. V. Alekseeva

Exzeigenschaften der binären Mischsysteme aus den isomeren Butanolen, G. Geiseler, K. Süßnel und K. Quitsch

Association in Diluted Solutions of Butyl Alcohols in Non-dipolar Solvents, J. Malecki and J. Jadzyn

Etude Thermodynamique des Mélanges Binaires, M. Garcia, M. A. Rios et M. I. Pat Andrade

Thermodynamic Properties of Some Heterocyclic Base-Aliphatic n-Alcohols Systems, A. Orszagh and T. Kasprzycka-Guttman

Specific Interaction in Amine-Alcohol Mixtures, F. Ratkovics, T. Salamon and I. Szabó

Liquid Phase Association and Dielectric Behaviour, J. Liszi, L. Domonkos and M. Ndry

Simultaneous Determination of the Stability Constants and Dipole Moments of Molecular Associates from Dielectric Data, W. Waclawek

### 第3回国際化学熱力学学会プログラム

Transport Properties, Dielectric Constants and Solid + Liquid Phase Diagram of Dioxane + Sulfolane System, L. Jannelli, A. Inglesi, A. Sacco and P. Ciani  
Thermodynamic Study of DMSO + Halomethanes Mixtures, R. Philippe and P. Clechet

Acidic Organophosphorus Extractants—XX. A Calorimetric Study of Interaction with Various Solvents, Z. Kolarik and Y. Marcus  
Zweite Virialkoeffizienten im System Wasser-Methanol, G. Opel und M. Ramsdorf

A Thermodynamic Characterization of the Hydrophobic Interaction, F. Franks and D. S. Reid

Thermodynamic Properties of Liquid Mixtures at High Pressure, P. Engels, G. Götz and G. M. Schneider  
Enthalpies of Mixing in Ternary Aqueous Nonelectrolyte Solutions, V. P. Belousov

Apparent Molar Specific Heats of Organic Solutes in Aqueous Solution, S. Cobani, G. Conti, A. Martinelli and E. Matteoli  
Thermodynamic Properties of Binary Mixtures of Water + Alkanols, J. A. Lark and R. C. Pemberton

The Solubility of Mixtures of Hydrogen Sulphide and Carbon Dioxide in Aqueous Diethanolamine Solutions, J. I. Lee, F. D. Otto and A. E. Mother  
Reaction Rates Near Consolute Points of Liquid Mixtures, M. M. Breuer, H. C. Birrell and P. Meehan

Heats of Mixing of a Liquid Crystal (MBBA) with Non-Polar Solvents, W. Wójcicki and J. Stecki

#### Section 6:

Thermodynamic Derivation of a Modified Boltzmann Equation for the Composition Distribution in an Electric Field, F. H. Horne and Jing-Shyong Chen

Thermodynamische Charakteristiken der übersättigten zweikomponentenwäßrigen Lösungen starker Elektrolyte, E. I. Akhunov

Some New Kinds of Interactions in Ionic Solutions, R. Gopal

Thermodynamic Excess Functions in Electrolyte Solutions, R. Vilcu and F. Irinei

Thermochemistry of Oscillating Reactions, R. P. Rastogi, K. D. S. Yadava and A. Kumar

Enthalpy-of-Dilution Behavior for Aqueous Lanthanum Perchlorate Solutions at 298.15 K, C. E. Vanderzee and J. D. Nutter

Thermochemistry of Chlorides  $MCl_x$  ( $M = Ti, Zr, Sn$ ) in Solutions and Standard Thermodynamic Properties of Ions  $M^+$  (IV), V. P. Vasiljev, P. M. Vorobjev, V. N. Vasiljev, N. I. Kokurin, L. A. Kochergina and A. I. Litkin

Dynamite Solution Densimetry and Flow Microcalorimetry: Partial Molal Volumes and Heat Capacities of Organic Solutes and Proteins, C. Jolicœur, P. Picker and J. Boileau

Dilatometric Studies of Polycarboxylates Aqueous Solutions, V. Crescenzi, F. Delben, S. Paolletti and J. Skerjanc

Physico-Chemical Properties of Guanidinium Salts Aqueous Solutions, G. Barone, V. Elia and D. Paparone

Ein Beitrag zum Problem der Voraussage von Salz-Effekten aus charakteristischen thermodynamischen Eigenschaften, H. Schubert

Thermodynamics of Salt Distribution between Isoamyl-Alcohol and Water, K. S. Krasnow and T. S. Kasas

Apparent Molal Heat Capacities, Volumes and Expansivities of Alkali Halides in Urea-Water Mixtures, J. E. Desnoyers, N. Desnoyers and G. Perron

Thermodynamic Quantities for Dissociation of Acids in Water-t-Butyl alcohol Mixtures, L. Avedikian, J. Juillard and J. P. Morel

The Conductance of Alkali Halides in Solvent Mixtures Involving Sulfolane, L. Jannelli, M. Costegnola, G. Petrella and A. Sacco

Correlation of Thermodynamic Properties of NaI and CsI Solutions in Dimethylsulfoxide and Acetone, K. P. Mishchenko, N. P. Novoselov and O. I. Ryabchenko

Thermodynamics of Solution of Some Anhydrous Halides of Metals in Absolute Methyl and Ethyl Alcohols at Different Temperatures, G. A. Krestov, V. A. Kobenin and S. V. Semenovsky

Influence of the Complexation of Ion Pairs on the Conductivity of Organic Solutions, H. Huyckens, D. Pirson, M. C. Haulst and G. Postin

Thermochimistry of Lanthanides Complex Formation Reactions with Complexions in an Aqueous Solution, P. M. Milukov and N. V. Polenova

Thermodynamic Studies of Complex Formations and Solubilities in the System  $Ca^{2+}$ - $Mg^{2+}$ - $CO_3^{2-}$ - $H_2O$ , H. Gamsjäger, W. F. Riesen and P. W. Schindler

Potentiometric Studies on Isopolycomplex Equilibria. (XXXV) Relation between "Isoligand Point" and Isopolycomplex Complexes: The System  $Ni^{2+}$ /thiomolybdate Ions in the Solvent  $Na^+ClO_4^- = 1M$ , at 25°C, E. Boizard and G. Carpénie

Etude des Equilibres d'Isopolycondensation du Niobium V en Solution Alcaline: Mécanismes de Formation, A. Goroff and B. Spinner

Potentiometric Studies on Acid-Base Isopolyassociations in Aqueous Solutions. (XXXVI) Glycine and Ascorbic Acid Systems at 25°C, G. Carpénie, S. Poize, N. Sabiani and G. Perinet

#### Section 7:

The Solution Chemistry of Binary Charge-Symmetrical Fused Salt Mixtures, O. J. Kleppa

Mischungsenthalpien in Alkalichlorid-Lanthanidenchlorid-Systemen, R. Blachnik und F. Dienstbach

Activity Factors and Excess Functions in Some Molten Binary Mixtures of Nitrates, R. Connan

Ionenbeweglichkeiten in Ladungssymmetrischen Salzschmelzen aus Erdalkalimetall-Alkalimetallchloriden, H.-H. Emons

On the Determination of the Partial Excess Free Energy of Dissolved Salt in Molten Salt Medium, B. F. Markov

Thermodynamic Functions from Electromotive Force Measurements with Concentration Cells in Molten Salts, I. G. Murgulescu and Ludmila Popescu  
Molar Volumes and Conductibilities of (Ag-Alkali)Br Molten Mixtures, G. Poillerat

Interpretation of the Temperature Dependence of the Partial Heat of Mixing in Dilute Solution in Liquid Metallic Systems. Application to the Au-Sn System, C. Chatillon-Colinet et J. C. Mathieu

A Theoretical and Experimental Study of Thermodynamic Properties in Ternary Fused Salt Mixtures, M. Gaune-Escard and J.-P. Bros

Thermodynamic Study of Ternary Systems In-Bi-Sb, Ti-Bi-As, Ti-Bi-Sb, A. A. Kuliev, A. S. Abbasov and A. N. Mamedov

Thermodynamic Studies of the Zn-Sn-In System in Dilute Liquid Zinc Solutions, Z. Moser

Phase Diagrams of Reciprocal Molten Salt Systems, M. L. Saboungi and M. Blander

Thermodynamic Properties of Reciprocal Fused Salt Pairs (Ag<sup>+</sup>, Me<sup>+</sup>, I<sup>-</sup>, X<sup>-</sup>), S. Sternberg and L. Bejan

Thermochemistry of Molten Mixtures of Sodium Fluoride and Aluminium Fluoride and the Composition of the Melts in the System, J. L. Holm

Determination of the Standard Electrode Potential of Sodium in the Fused LiCl-KCl Eutectic at 450°C, H. Pean and J.-B. Lesourd

#### Section 8:

Introductory Paper: Thermodynamics of Interfaces, R. Bown, C. E. Brown, D. H. Everett and P. E. Thorne

Thermodynamics of Interfaces and Interfacial Layer Thickness, A. I. Rusanov

A Multilayer Model of the Interface of Binary Solutions with Polar Components, N. A. Smirnova and E. N. Brodskaja

Statistical Model of the Adsorption of a Surface Active Species on Metals, G. L. M. Bernard and C. H. P. Lupis

Thermodynamic Considerations on the Existence of an Equation of State between Interfacial Tensions, C. A. Ward and A. W. Neumann

Interdependence of van der Waals and Double Layer Interactions between Charged Interfaces, E. Beroukh, J. W. Perram and E. R. Smith

#### Section 9:

Thermodynamics of the Gas-Liquid Interface in Fluorocarbon Containing Chain Molecule Mixtures, B. Edmonds, M. Lal and I. A. McLure

Critical Temperatures of Two-Dimensional Condensation of Methane and Rare Gases on the Cleavage Face of Layer-Like Halides, Y. Nardon and Y. Larher

Heats of Adsorption of Polycyclic Aromatic Hydrocarbons at Graphite/Cyclohexane Interfaces, A. J. Groszek

Kalorimetrische Messungen zur Adsorption von Makromolekülen aus Lösung, E. Killmann und K. Winter

Use of Differential Heats of Adsorption to Understand the Texture of a Microporous Silica Gel, C. Peres, F. Rouquerol and J. Rouquerol

Influence of Adsorption Temperature on Adsorption Heat Evolution, G. Della Gatta, B. Fubini and G. Venturolo

Influence of Sites Energetic Distribution on the Shape of an Isotherm—Grinding Correlation, P. Degoul

Prototypic Behaviour and Ligand Properties of Surface OH Groups, P. W. Schindler

#### Section 9:

Thermodynamics of Dilute Metallic Alpha Solutions in Silver, Copper and Gold, C. B. Alcock and K. T. Jakob

Discussion: Thermodynamic Mass Spectrometric Study of the Gaseous and Condensed Phases in the Al-Cu-System, C. Chatillon, J. Perakis and A. Pattoret  
Calorimetric Investigations of Solid Solutions of Gold with Some Transition Metals, B. Predel and E. Zehnpfund

Discussion: Induktive Mikrokalorimetrie, F. Müller

Thermodynamics of Terminal Solid Solutions of Zn in Ni, Y. A. Chang, G. Henning and D. Nauijock

Discussion: A Mass Spectrometric Study of Activities of the Ti-Fe-System, E. J. Rolinski and D. E. Earley

Thermodynamic Properties of Au-Pd and Ag-Pd Solid Solutions, D. C. Bartosik, P. K. Raychaudhuri and D. H. Whitmore

Discussion: Calculation of the Formation Volumes of Alloys, J. J. v. d. Broek

A High-Temperature Thermodynamic Investigation of the Pt-ZrP<sub>2</sub> System, P. J. Meschter and W. L. Worrell

# 熱測定

Discussion: The Oxidation Equilibria of the Urania-Thoria Solid Solutions, D. Jakes and F. Skvor

Thermodynamic Properties of Laves Phases in Ba-Pt, Ce-Ir, and La-Ir Systems. Solid Electrolyte Galvanic Cell Studies, T. N. Rezukhina

Discussion: The Thermodynamic Properties of Some Metal Fluorides. Solid Electrolyte Galvanic Cell Studies, T. N. Rezukhina, T. Sisoeva and L. Holokhanova

Solid Electrolyte EMF Studies and Differential Scanning Calorimetry of Palladium-Indium Alloys, J. N. Pratt, J. M. Bird and A. W. Pyrant

Discussion: The Study of Vaporization Processes of Nd<sub>2</sub>O<sub>3</sub> in Neutral and Oxidizing Atmosphere, G. Benezech, J. P. Coutures and M. Foëx

Thermodynamic Properties of the Th-Ru-System, H. Kleykamp and M. Murabayashi

Discussion: A Thermodynamic Study of the Niobium-Oxygen and Tantalum-Oxygen Solid Solutions Utilizing Solid Electrolytic Cells, W. Nickerson and C. Alstetter

Vaporization of Silicon Nitride, Si<sub>3</sub>N<sub>4</sub>, M. Hoch, W. Jamison and M. Yamawaki

Discussion: Thermodynamics of the Titanium-Aluminium-Oxygen System, M. Hoch and T. Vernardakis

Segregation and Vapour Pressure Studies on the U-Pu-C-System, P. Browning, B. A. Phillips, P. E. Potter and M. H. Rand

Discussion: Equilibria Involving Volatile UO<sub>2</sub>Cl<sub>2</sub>, E. H. P. Cordfunke and G. Prins

Über die thermodynamische Stabilität von (U, Zr) (C, N), C. Kouhsen und A. Naoumidis

Discussion: High Temperature Enthalpy and Related Thermodynamic Functions of Non-Stoichiometric Uranium Oxides, D. I. Marchidan and M. Ciopac

Discussion: High-Temperature Thermodynamic Properties of Some Uranium Oxides from EMF Measurements on Solid Electrolyte Galvanic Cells, D. I. Marchidan and S. Matei-Tanasescu

Thermodynamic Study of Some Zirconates of Alkali-Earth Metals at Elevated Temperatures, Ja. I. Gerassimov, V. A. Levitski and Ju. Hekimov

Discussion: Modern Thermodynamic Analysis Methods of Multicomponent Solid Solutions with Varying Composition and Defectivity, A. N. Men', Yu. V. Vorob'ev and G. I. Chufarov

A Calorimetric Study of the Eutectoid Transformation in the Zinc-Aluminium System, F. R. Sole and D. Cheetham

Discussion: Experimental Study of the Ferrite/Austenite Equilibrium in the Fe-Cr-Mn-System and the Optimization of Thermodynamic Parameters by Means of a General Mathematical Method, G. Kirchner and B. Uhrenius

Heat Capacity of Nickel and Cobalt Tellurides, K. C. Mills

Discussion: Thermodynamic Properties of Alkali Chlorides and Alkaline Earth Chlorides with the Chlorides of the Iron Group Metals, B. P. Burylev, V. Ya. Gershunina, V. L. Mironov and I. T. Sryabin

Heat Capacity and Thermodynamic Properties of Synthetic Magnetite (Fe<sub>3</sub>O<sub>4</sub>). Ferrimagnetic Transition and Zero-Point Entropy, F. Gronvold and A. Sveen

Discussion: Low Temperature Specific Heats of Dysprosium and Holmium Dihydrides, Z. Bieganski, J. Opyrchal and M. Drulis

Discussion: The Heat Capacity Anomalies at the Magnetic Transitions in Pure Chromium Metal, R. Weber, R. Street and R. Easton

A Heat Capacity Study of Order-Disorder Transitions in Tris (Ethylenediamine) Copper (II) Sulphate and Tris (Ethylenediamine) Nickel (II) Sulphate: The Connection between the Transition in the Copper Salt and the Jahn-Teller Effect, R. D. Worswick, A. Davies and L. A. K. Staveley

Discussion: Thermodynamic Properties of Bivariant Equilibria for Hydrates and Water Vapor, J.-J. Gardet, B. Builhot, J.-C. Mutin, M. Soustelle and G. Watelle-Marion

## Section 10:

The Solubilities of Gases in Benzene and Isobutanol Solutions of Cholesterol, Lecithin and Cephalin, J. E. Byrne, W. F. Danforth and R. Bottino

Thermodynamics of Aqueous Solutions of Alkyureas and their Biochemical Effects, G. Barone, V. Elia, L. Ferrara and E. Rizzo

Thermochemical Properties of some Benzene Derivatives In Aqueous Solution, N. Nichols and I. Wadsö

Thermochemistry of transfer of N-Alkylamides from Water to Non-Aqueous Media, G. Öjelund, R. Sköld and I. Wadsö

Thermodynamic Properties of Aqueous Solutions of Fat Acids Salts and Some Lipids, A. G. Morachevsky and E. P. Sokolova

The Low Temperature Phase Behaviour of Aqueous Saccharides, D. S. Reid, D. W. J. Blackburn and H. M. Page

The Technique of Thermal Perturbation to Measure Ligand Binding to Macromolecules, R. Biltonen

Heats of Successive Reactions between Hemoglobin and CO, J. St. Gill

Thermodynamic Studies on the Binding of NADH to Lactate Dehydrogenase, H. J. Hinz

Die Informations-energetische Analyse der Konformationsarbeit des Hämoglobinmoleküls, K. Trincher

Iron (III) Exchange between Chelates and Transferrin: Protons Displacement from Apotransferrin during the Reaction, P. Silberzahn, P. Boivinet and J. F. Coulon

Calorimetric Studies on the Recombination of Human APO-HDL with Hydroxy-Phosphatidylcholine, M. Y. Rosseneu-Motreff, V. Blaton, F. Soetevel and H. Peeters

Thermodynamics of Conformational Change, T. H. Benzinger

Discussion: Thermodynamics of Interfaces Organism—Environment as an Index of the Metabolic Energy, R. J. Florov and Zh. V. Stojanov

Microcalorimetry of the Interaction of DNA with Proflavine in Dilute Aqueous Solution, F. Quadrifoglio, V. Giancotti and V. Crescenzi

Enthalpy of Reduction of Disulfide Crosslinks in Denatured Lysozyme, S. Lapanja and J. A. Rupley

## DETAILED SCHEDULE OF THE SYMPOSIUM ON PHYSICO-CHEMICAL TECHNIQUES AT HIGH TEMPERATURES

### Session 1—Temperature Production and Measurement

Introductory Lecture, K. Motzfeldt

Problems in Accurate Temperature Measurement: The Melting Point of Y<sub>2</sub>O<sub>3</sub>, S. J. Schneider and C. L. McDaniel

High Temperature Thermal Analysis Apparatus, R. Lecocq

High Precision Apparatus with Electromagnetic Levitation Method of Induction Heating Samples for Calorimetric and Temperature Measurements up to 3000° K, V. V. Kandyba and V. D. Ovsyanikov

Oxidizing Atmosphere Tunnel Furnace ( $T > 2000^{\circ}$  K), K. Dembinski, L. Dupont, J. L. Dunand and A. M. Anthony

Experimentation à Haute Température Avec un Nouveau Type de Four à Image, J. P. Traverse et R. Flamand

Nouveaux Types d'Appareillage Haute Température Associe à des Dispositifs à Concentration de Rayonnement, G. Benezech, J. P. Coutures, B. Granier et M. Foëx

Application du Chauffage par Concentration de Rayonnement (four à image) à l'Elaboration de Matériaux Refractaires Nouveaux, R. Collongues, A. Revcolevschi, M. Saurat et G. Dhallenne

Effects of Oxygen and Argon Atmospheres on Pendant Drops of Aluminium Oxide Melted with Carbon Dioxide Laser Radiation, L. S. Nelson and N. L. Richardson

### Session 2—Vapour Pressures and Gas-condensed Phase Equilibria

Introductory lecture: Vapor Pressure Methods, K. L. Komarek

Vapour Pressure Measurements by the Mass-Loss Diffusion Method, H. Kvande, K. Motzfeldt and P. G. Wahlbeck

Determination of Quantitative Thermodynamic Data for High Temperature Vaporization Processes and Solid-Vapor Reactions Employing the Effusion-Mass Spectrometric Technique, M. Farber

Analysis of Thermochimical Errors and Systematics in Sublimation of Lanthanide Trifluorides, J. R. McCreary and R. J. Thorn

Mass Spectrometric Investigations of Liquid Alloy Systems, A. Neckel, L. Erdelyi, G. Sodeck and E. Buschmann

The Influence of Thermal Diffusion on Chemical Reactions Between Gas Mixtures and Levitated Liquid Metal Droplets, A. McLean

Vapor Pressure and Triple Point of Graphite, E. T. Chang and N. A. Gokcen

### Session 3—Structural Studies by X-ray Diffraction

Application du Chauffage par Concentration de Rayonnement (four à image) à la Diffraction des Rayons X à très Haute Température (3 200° C), J. Hubert, A. Revcolevschi et R. Collongues

Röntgenbeugung an polykristallinen Feststoffen bei hohen Temperaturen unter besonderer Berücksichtigung der Verhältnisse bei Graphit, E. Fitzer und U. Funk

Mesures Precises par Diffractométrie des Rayons X à Haute Température, Application à l'Etude d'Oxydes Réfractaires, J. P. Traverse et J. M. Bodie

A High Temperature X-ray Technique for Powdered Materials up to 2600° C, E. Fitzer and S. Weissenburger

Neutron Diffraction at High Temperatures, M. Steinitz and C. B. Alcock

### Session 4—Calorimetry

Reaction Calorimetry at High Temperature, O. J. Kleppa

An Assessment of the Accuracy of the High Temperature Heat Capacity of Solid Metals, C. R. Brooks and E. E. Stansbury

Accuracy and Precision in High Temperature Specific Heat and Thermal-Conductivity Measurements, M. Hoch

Radiation and Conduction Loss Corrections with Applications to Free Drop Calorimetry Data, D. W. Bonnell, A. J. Valerga and J. L. Margrave

High Temperature Thermodynamic Data for Liquid Metals by Levitation Calorimetry, D. W. Bonnell, A. J. Valerga and J. L. Margrave

Use of a Tian-Calvet Microcalorimeter at 1300° C Direct Measurement of  $\Delta_f H^\circ$  in the Metal-Oxygen Systems, G. Bureau and P. Gerdanian

High Temperature Calorimetry up to 1800° K, M. Gaune-Escard and J.-P. Bros

Adiabatic Shield Calorimeters for Heat Capacity and Enthalpy Measurements, F. Gronvold

### 第3回Analytical Calorimetry シンポジウムプログラム

#### Session 5—Electromotive Force Measurements

- High Temperature EMF Measurements in Solid and Liquid Electrolytes, S. N. Flengas  
Interpretations of EMF of Concentration Cells, T. Ostvold  
Application of EMF-Method to Determination of Thermodynamic Properties of Slag Systems, G. M. Mehrotra, M. G. Frohberg, M. L. Kapoor and P. M. Mathew  
Experimental Considerations in the Use of Solid Oxide Electrolytes, C. B. Alcock and S. Zador  
Limitations in the Use of Solid State Electrochemical Cells for High-Temperature Equilibrium Measurements, T. A. Ramanarayanan and W. L. Worrell

#### Session 6—Kinetic Studies

- Kinetic Studies at Elevated Temperatures—Some Experimental Problems, G. R. Belton  
Measurement of Diffusion Coefficients at High Temperatures Using Electrochemical Techniques, B. C. H. Steele  
The Use of Isotope Exchange Reactions for the Study of Heterogeneous Reaction Kinetics, H. J. Grabke

## ★フランス化学会分析化学部会実験熱力学グループ プログラム(1973年10月11日～12日)

### Thermodynamique des phases condensées non métalliques.

1. Mesure par spectrométrie de masse des propriétés thermodynamiques des mélanges d'oxydes. Exemple: le système  $Gd_2O_3$ - $Ga_2O_3$ . M. ALLIBERT
2. Etude de l'interaction Oxygène-oxydes réfractaires liquides purs ou complexes. Aspects expérimentaux et problèmes liés à l'interprétation thermodynamique des résultats obtenus. J. P. COUTURES
3. Comparaison des propriétés thermodynamiques des systèmes  $FeO$  et  $MnO$ . C. CAREL
4. Existence du composé  $YbO$  et estimation de ses propriétés thermodynamiques. J. C. ACHARD
5. Sur une détermination indirecte de l'entropie standard du nitrate de lithium. J. B. LESOURD
6. Etude thermodynamique du système liquide  $NO_3K$ - $NO_3Li$ . M. GAUNE-ESCARTE
7. Contribution à l'étude du système U-O-Nd. J. F. WADIER

### Corrélations entre les grandeurs thermodynamiques et les transitions de phases.

1. Conférence de Mr. le Professeur KUBACHEWSKI.
2. Critères expérimentaux pour la recherche de corrélations entre grandeurs thermodynamiques et et structurales dans l'étude des transformations ordre désordre. Application aux alliages  $AuCu_3$  et  $AuCu_{1-x}Ni_x$ . J. HERTZ

### 3. Détermination de transformations de phases par spectrométrie de masse à haute température.

- A. PATTORET
  4. Diagramme de phases solide-liquide des composés ternaires III-IV et IV-VI. A. LAUGIER
- ### Thermodynamique des phases métalliques.
1. Etudes thermo-chimiques des phases condensées par spectrométrie de masse. Analyse de la méthode et revue des résultats. C. CHATILLON
  2. Détermination par spectrométrie de masse des activités thermodynamiques des constituants du système Gallium-Antimoine à 1000 K. C. BERGMAN
  3. Calorimétrique à haute température: mesure des enthalpies de formation des alliages de métaux nobles à 1500 °C. J. P. BROS
  4. Etude calorimétrique de quelques métaux de terres rares et leurs composés  $LnSn_3$ . Mme A. PERCHERON-CHÉGAN
  5. Etude de quelques alliages ternaires à base de bismuth et de gallium: détermination des enthalpies de formation et des limites de zone de démixtion. M. GAMBINO
  6. Contribution à l'étude du diagramme de phases des alliages mercure - étain par analyse calorimétrique différentielle à basse température. Y. CLAIRE

## ★第3回Analytical Calorimetry シンポジウムプログラム(1974年4月2日～5日)

### Thermal Properties of the Polylactone of Dimethylketene, a New Model Polymer.

E. M. Barrall II, D. E. Johnson, B. L. Dawson

### Thermal Properties of Some Substituted Poly pentenamers. K. Sanui, W. J. MacKnight, R. W. Lenz.

### Recent Advances in Titration Calorimeters.

L. D. Hansen, R. M. Izatt, D. J. Eatough, J. J. Christensen.

### Recent Analytical Applications of Solution Calorimeters. R. M. Izatt, L. D. Hansen, D. J. Eatough, J. J. Christensen.

### Biochemical and Clinical Applications of Titration Calorimetry and Enthalpimetric Analysis.

A. C. Censullo, J. A. Lynch, D. H. Waugh, J. Jordan.

### Kinetics of an Anhydride-Epoxy Polymerization as Determined by Differential Scanning Calorimetry.

P. Peyer, W. D. Bascom.

### Determining the Kinetic Parameters for Two Materials Decomposing Simultaneously.

R. W. Mickelson, M. A. Capraro, S. M. Autio.

### Preliminary Results on the Nature of $n$ in Equation $(dx/dt)=k(a-x)^n$ as Applied to Three Solid Thermal

### Decomposition Reactions.

D. M. Speros, H. R. Werner.

### International Standards for AT Progress and Problems. H. G. McAdie.

### Calorimetric Studies of Extrusion.

H. P. Schreiber.

### The Enthalpy of Fusion of Low Molecular Weight Linear Polyethylene Fractions Crystallized from Dilute Solution.

S. Go, F. Kloos, L. Mandelkern.

### Fusion as an Opportunity for Calorimetrically Probing Polymer Conformations and Interactions in the Bulk State.

A. E. Tonelli.

### Self-Seeded PE Crystals; Melting and Morphology.

I. R. Harrison, G. L. Stutzman.

### The Detection of Impurities by Thermal Analysis.

H. J. Ferrari, N. J. Passarello.

### The Development and Application of an Ultra-Sensitive Quantitative Effluent Gas Analysis Technique.

P. A. Barnes, E. Kirton.

### Effect of Dehydration on the Specific Heat of Cheese Whey.

E. Berlin, P. G. Kliman.

### Some Recent Research on Thermal Properties of Milk Fat Systems.

J. W. Sherbon.

### Thermal Behavior of Chemical Fertilizers.

C. Giavarini.

### Novel Thermal Methods for Gas Generating Reactions.

A. A. Duswalt.

### Theory of Differential Scanning Calorimetry -- Coupling of Electronic and Thermal Steps.

J. H. Flynn.

## 熱測定

- Steady State Technique for Low Temperature Heat Capacity of Small Samples.  
R. Viswanathan.
- Some Applications of Differential Scanning Calorimetry to the Study of Phase Transitions.  
W. P. Brennan.
- The Enthalpy and Heat of Transition of  $\text{Cs}_2\text{MoO}_4$  by Drop Calorimetry.  
D. R. Frederickson, M. G. Chasanov.
- High Sensitivity Enthalpimetric Determination of Olefins.  
L. Williams, B. Howard, D. W. Rogers.
- The Use of Thermal and Ultrasonic Data to Calculate the Pressure Dependence of the Grunisen Parameter.  
R. Urzendowski, A. H. Guenther.
- Factors Which Establish the Sensitivity of Thermistors as Temperature Transducers.  
L. D. Bowers, P. W. Carr.
- The Interaction of Proteins with 12-Phosphotungstic Acid --- A Thermochemical Investigation.  
P. W. Carr, S. R. Betso, R. E. Callicott.
- DSC Study of the Conformational Transition of Poly-Y-Benzyl-L-Glutamate in the 1,3-Dichlorotetra-fluoroacetone-Water System.  
F. E. Karasz, J. Simon.
- Differential Scanning Calorimetry Studies on DNA Gels.  
H. W. Hoyer, S. Nevin.
- Heats of Immersion of Hydroxyapatites in Water.  
H. M. Rootare, R. G. Craig.
- Heats of Solution of Apatites, Human Enamel and Dicalcium-Phosphate in Dilute Hydrochloric Acid.  
R. G. Craig, H. M. Rootare.
- Thermomechanical Analysis of Dental Waxes in the Penetration Mode.  
J. M. Powers, R. G. Craig.
- Calorimetric Investigation of Chymotrypsin Ionization Reactions.  
C. J. Martin, B. R. Greenathan, M. A. Marini.
- Verification of the Ionic Constants of Proteins by Calorimetry.  
M. A. Marini, C. J. Martin, R. L. Berger, L. Forlani.
- The Construction of a Microcalorimeter and Measurements of Heats of Solution of Stretched Glassy Polystyrene.  
Y. Takashima, K. Miwa, S. Miyata, K. Sakaoku.
- Crystallization of Polychethylene from Xylene Solutions Under High Pressure.  
S. Miyata, T. Arikawa, K. Sakaoku.
- Calorimetric Investigation of the Chloroform - Pyridine Complex.  
G. L. Bertrand, T. E. Burchfield.
- Solid State Reaction Kinetics: IV The Analysis of Chemical Reactions by Means of the Weibull Function.  
E. A. Dorko, W. Bryant, T. L. Regulinski.
- Applications of Group Enthalpies of Transfer.  
R. Fuchs.
- Utilization of an Electronic Integrator to Determine the Heat of Transition of Some Tetrafluoroborate Salts.  
R. T. Marano, R. Krienke, R. Attnip.
- Design Considerations for a Scanning Calorimeter.  
K. L. Churney, E. J. Prosen.
- A Small, Mini-Computer-Automated Thermoanalytical Laboratory.  
E. Catalano, J. C. English.
- Applications of Thermal Analysis as a Substitute for Standard ASTM Polymer Characterization Tests.  
P. S. Gill, P. F. Levy.
- The Use of Thermal Evolution Analysis for the Determination of Vapor Pressure of Agriculture Chemicals.  
R. L. Blaine, P. F. Levy.
- Slow Reversion of Potassium Nitrate.  
P. D. Garn.
- Hot-Stage Electron Microscopy of Clay Minerals.  
D. L. Jernigan, J. L. McAtee, Jr.
- Thermal Decomposition of Cementitious Hydrates.  
J. N. Maycock, J. Skalny.
- Rapid Quantitative Methods for Bound Water Determination in Aqueous System with Differential Scanning Calorimeter.  
E. Karmas, C. C. Chen.
- Applications of Quantitative Thermal Analysis to Molecular Sieve Zeolites.  
W. H. Flank.
- Calorimetric Studies of Pi-Molecular Complexes.  
W. C. Herndon, J. Fuer, R. E. Mitchell.
- The Dissociation Energy of NiO and Vaporization and Sublimation Enthalpies of Ni.  
M. Farber, R. D. Srivastava.
- Importance of Joint Knowledge of  $\Delta H^\circ$  and  $\Delta S^\circ$  Values for Interpreting Coordination Reactions in Solution.  
G. Berthon.
- Thermogravimetric Analysis of Polymethylmethacrylate and Polytetrafluoroethylene.  
J. A. Currie, N. Pathmanand.
- Heat of Fusion of Crystalline Polypropylene by Volume Dilatometry and Differential Scanning Calorimetry.  
J. A. Currie, E. M. Petruska, R. W. Tung.
- DSC: New Developments in Clinical Analysis and Physicochemical Research.  
B. Caswel.
- Positional Effects of the Phosphate Group on Thermal Polymerization of Isomeric Uridine Phosphates.  
A. M. Bryan, P. G. Olafsson.
- Thermal Evolution Analysis of Some Organic Materials.  
E. W. Kifer, L. H. Leiner.
- Thermodynamics of Intermolecular Self-Association of Hydrogen Bonding Solutes by Titration Calorimetry.  
E. M. Woolley, N. S. Zaugg.
- Thermal and Microscopical Study of the Condensed Phase Behavior of Nitrocellulose and Double Base Materials.  
S. Morrow.
- Application of Scanning Calorimetry to Petroleum Lubricant Oxidation Studies.  
F. Noel, G. E. Cranton.
- Melting Behavior of Some Oligomers of Heterocyclic Polymers by Differential Scanning Calorimetry.  
H. Kembe, R. Yokota.
- Thermodynamic Properties of  $\text{REX}_3$ ,  $\text{AuCu}_3$ -Type, Intermetallic Compounds.  
A. Palenzona, S. Cirafici.
- The Determination of the Heat of Fusion by Differential Scanning Calorimetry and by Measurements of the Heat of Dissolution.  
E. Marti.