



INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY  
Analytical Chemistry Division  
SOLUBILITY DATA COMMISSION (V.8)

**Minutes of the 27<sup>th</sup> Annual Meeting (21<sup>th</sup> of SDC)**  
to be held in conjunction with the 41<sup>th</sup> IUPAC General Assembly at Queensland  
University of Technology, Brisbane, Australia, 29 June – 8 July 2001

The List of Attendees with complete addresses, telephone and fax numbers together with e-mail addresses is attached to these minutes.

**Commission V.8, morning session, 30 June 2001**

**1. Welcome of participants**

David Shaw, Chairman of Commission V.8., called the meeting to order and welcomed the participants at 9:15. The Chairman welcomed in particular Justin Salminen (Helsinki University of Technology, Finland), who received the "Franzosini Award 2001".

**Introduction of participants**

Attendees were asked to identify themselves and their affiliation.

**2. Approval of Minutes of the 26<sup>th</sup> Meeting (20<sup>th</sup> of SDC) held at Grand Palais des Congrès, Hammamet, Tunisia, July 23-24, 2000**

The Hammamet Minutes were approved.

**3. Other Items for Agenda**

The attendees were informed that Shirley and Jack Lorimer were not able to participate in this meeting, because they had an accident and were injured. The commission V.8 wished them a speedy recovery.

**4. Announcements by Secretary**

The Secretary requests the participants to fill in the attendance list the actual postal and E-mail addresses, fax and phone numbers. Contributors to the Commission's activities are requested to provide their text on discs when they want to communicate it via the minutes.

5. **Chairman's Report for 2000 - 2001 D. Shaw**

David Shaw reports that the Solubility Data Project remains active and has excellent future prospects within IUPAC. All Commissions (including V.8) and most Standing Committees have been disbanded as part of the reorganization of IUPAC which is now essentially complete. However, a new Subcommittee of the Analytical Chemistry Division has been created to coordinate the work of the Solubility Data Project.

The Chairman of this Subcommittee will be Heinz Gamsjaeger.

Scientifically, the SDP continues to meet high standards, thanks in large part to the efforts of Mark Salomon, the Series Editor-in-Chief. SDS volumes are now published through the Journal of Physical and Chemical Reference Data and the evaluated data are being incorporated into the US National Institute of Standards and Technology Chemistry Webbook for electronic access.

There will be some changes in the way the Solubility Data Project operates after the change-over is complete from the old Commission structure to the new Subcommittee structure. One of the Subcommittee's responsibilities will be to encourage preparation of volumes in areas with applications and relevance to human health, the environment and industrial processes. However, as always, volumes in all areas of chemistry will be welcome.

The Chairman thanks all contributors for their past participation in the SDP. He is looking forward to working with this group in future SDP efforts.

**See below the procedure how future Projects of the Subcommittee on Solubility and Data Equilibrium Data will be handled**

**(As discussed with Ted Becker by David Shaw, Folke Ingman and David Moore, 31 June 2001 at Brisbane GA)**

**Projects that are part of a series**

Submit an initial "phantom" project submission form

The information contained on the phantom form includes

Area of interest/applicability, i.e., who is the customer?

Suggested external reviewers from those areas

**The "phantom" project form will then be sent to the ACD officers for review**

Then it will go to the external reviewers, plus those external reviewers recommended by the ACD officers

Once the series is approved, the individual projects (volumes) that are part of the series only need to submit a simplified project form, referencing the series "phantom" project number

### Projects that are individual

Individual projects (volumes) need to submit a full project submission form.

### Projects that are individual, but are either near completion or need no funding

These projects (volumes) should submit a simplified project form, and the necessity for external review will be left to the ACD committee

#### 6. Editor-in-Chief's Report for 2000-2001 - M. Salomon (presented by D. Shaw)

##### 1) General comments of the Editor-in-Chief

The relationships with U.S. National Institute of Standards and Technology and the American Institute of Physics could really not be any better. David Shaw and I have kept in close contact with NIST and would like to acknowledge the guidance of Dr. John Rumble and Dr. Malcolm Chase in publishing SDS in the Journal of Physical and Chemical Reference Data. JPCRD is published by the American Institute of Physics, and, our colleagues at the AIP have also been extremely helpful and cooperative. A number of earlier manuscripts were only available in hard copy or in word processing programs which are quite old and no longer available to the scientific community, and the AIP has successfully managed to overcome these difficulties to produce both electronic and hard copy versions of these volumes for review before the volumes were published. A special word of "thanks" must be given to Mal Chase, editor of JPCRD. Dr. Chase's reviews of all manuscripts sent to him have been extremely thorough, and he has caught many errors (typos, omissions and misplaced compilations and evaluations). Dr. Chase's input to the IUPAC-NIST Solubility Data Series has been invaluable.

The only other important comment to make is to re-emphasize the need for all authors and editors to submit electronic versions of their volumes. Hard copy versions are also extremely helpful in the reviewing process.

##### 2. Volumes Published Or In Course of Publication

Referring to the volumes listed below, NIST has already published 8 volumes in the IUPAC-NIST SDS. Four more volumes have been reviewed and accepted for publication, and will be published shortly. Dr. Chase has informed me that the volume on metal formates (volume 73) is in the page proof stage and scheduled for JPCRD 30(1). I have not yet seen the proofs for this volume. Jiri Hala's volume on actinides (volume 74) is scheduled for JPCRD 30(2) and is in the page proof stage, volume 75 (Non-Metals in Liquid Alkali Metals) is scheduled for JPCRD 30(3), and volume 76 (Ethyne) is scheduled for JPCRD 30(4). Finally I would like to mention that a one page errata on typos in volume 66 (Ammonium Phosphates) was published in JPCRD 29(6). A review of volumes published or in course of publication in JPCRD is presented in the list below.

- Volume 66: J. Eysseľtová and T.P. Dirkse, "Ammonium Phosphates," *J. Phys. Chem. Ref. Data*, 1998, 27 (5) 1289-1470.
- Volume 67: A.L. Horvath, F.W. Getzen and Z. Maczynska, "Halogenated Ethanes and Ethenes with Water," *J. Phys. Chem. Ref. Data*, 1999, 28 (2) 395-627.
- Volume 68: A.L. Horvath and F.W. Getzen, "Halogenated Aliphatic Hydrocarbon Compounds C<sub>3</sub> - C<sub>14</sub> with Water," *J. Phys. Chem. Ref. Data*, 1999, 28 (3) 649-777.
- Volume 69: A. Skrzecz, D.G. Shaw and A. Maczynski, "Ternary Alcohol-Hydrocarbon-Water Systems," *J. Phys. Chem. Ref. Data*, 1999, 28 (4) 983-1236.
- Volume 70: Y. Yampol'skii, R. Paterson and P.G.T. Fogg, "Gases in Glassy Polymers," *J. Phys. Chem. Ref. Data*, 1999, 28 (5) 1255-1451.
- Volume 71: V.P. Sazonov, K.N. Marsh and G.T. Hefter, eds. *Nitromethane with Water or Organic Solvents: Binary Systems*, *JPCRD*, 29 (5), 1157 (2000).
- Volume 72: V.P. Sazonov, K.N. Marsh and D.G. Shaw, eds. *Nitromethane with Water or Organic Solvents: Ternary and Quaternary Systems*, *JPCRD*, 29 (6), 1447 (2000).
- Erratum: SDS volume 66, *Ammonium Phosphates*, *JPCRD*, 29 (6), 1643 (2000).
- Volume 73: Ch. Balarew, T.P. Dirkse, eds. *Metal and Ammonium Formate Systems*, *JPCRD*, in course of publication.
- Volume 74: J. Hála, ed. *Actinide Carbonates and Carbon-Containing Compounds*, *JPCRD*, in course of publication.
- Volume 75: H.U. Borgstedt and C. Guminski, *Nonmetals in Liquid Alkali Metals*, in course of publication.
- Volume 76: P.G.T Fogg, *Ethynes*, submitted and in course of publication.
- Volume 77: V. Sazonov and D.G. Shaw, *C<sub>2</sub>+ Nitroalkanes with Water or Organic Solvents: Binary and Multicomponent Systems*. Volume completed and undergoing final review. It will be submitted in either July or August 2001.

Submitted by M. Salomon, June 2001

## Solubility Data Series

Volumes 1-53 published by Pergamon Press

Volumes 54-65 published by Oxford University Press

Volumes 66 and above published in the *Journal of Physical and Chemical Reference Data* (JPCRD)

Volume 1: H.L. Clever, *Helium and Neon* (1979)

Volume 2: H.L. Clever, *Krypton, Xenon and Radon* (1979)

Volume 3: M. Salomon, *Silver Azide, Cyanide, Cyanamides, Cyanate, Selenocyanate and Thiocyanate* (1979)

Volume 4: H.L. Clever, *Argon* (1980)

Volume 5/6: C.L. Young, *Hydrogen and Deuterium*(1981)

Volume 7: R. Battino, *Oxygen and Ozone* (1981)

Volume 8: C.L. Young, *Oxides of Nitrogen* (1981)

Volume 9: W. Hayduk, *Ethane* (1982)

Volume 10: R. Battino, *Nitrogen and Air* (1982)

Volume 11: B. Scrosati and C.A. Vincent, *Alkali Metal, Alkaline Earth Metal and Ammonium Halides, Amide Solvents* (1980)

Volume 12: C.L. Young, *Sulfur Dioxide, Chlorine, Fluorine and Chlorine Oxides*

(1983)

Volume 13: S. Siekierski, T. Mioduski and M. Salomon, *Scandium, Yttrium, Lanthanum and Lanthanide Nitrates* (1983)

Volume 14: H. Miyamoto, M. Salomon and H.L. Clever, *Alkaline Earth Metal Halates* (1983)

Volume 15: A.F.M. Barton, *Alcohols with Water* (1984)

Volume 16/17: E. Tomlinson and A. Regosch, *Antibiotics: 1, -Lactam Antibiotics* (1985)

Volume 18: O. Popovych, *Tetraphenylborates* (1981)

Volume 19: C.L. Young, *Cumulative Index: Volumes 1-18*(1985)

Volume 20: A.L. Horvath and F.W. Getzen, *Halogenated Benzenes, Toluenes and Phenols with Water* (1985)

Volume 21: C.L. Young and P.G.T. Fogg, *Ammonia, Amines, Phosphine, Arsine, Stibine, Silane, Germane and Stannane in Organic Solvents* (1985)

Volume 22: T. Mioduski and M. Salomon, *Scandium, Yttrium, Lanthanum and Lanthanide Halides in Non-aqueous Solvents* (1985)

Volume 23: T.P. Dirkse, *Copper, Silver, Gold and Zinc, Cadmium, Mercury Oxides and Hydroxides* (1986)

Volume 24: W. Hayduk, *Propane, Butane and 2-Methylpropane* (1986)

Volume 25: C. Hirayama, Z. Galus and C. Guminski, *Metals in Mercury* (1986)

Volume 26: M.R. Masson, H.D. Lutz and B. Engelen, *Sulfites, Selenites and Tellurites* (1986)

Volume 27/28: H.L. Clever and C.L. Young, *Methane* (1987)

Volume 29: H.L. Clever, *Mercury in Liquids, Compressed Gases, Molten Salts and Other Elements* (1987)

Volume 30: H. Miyamoto and M. Salomon, *Alkali Metal Halates, Ammonium Iodate and Iodic Acid* (1987)

Volume 31: J. Eysseltova and T.P. Dirkse, *Alkali Metal Orthophosphates* (1988)

Volume 32: P.G.T. Fogg and C.L. Young, *Hydrogen Sulfide, Deuterium Sulfide and Hydrogen Selenide* (1988)

Volume 33: P. Franzosini, *Molten Alkali Metal Alkanoates* (1988)

Volume 34: A.N. Paruta and R. Piekos, *4-Aminobenzenesulfonamides. Part I: Non-cyclic Substituents* (1988)

Volume 35: A.N. Paruta and R. Piekos, *4-Aminobenzenesulfonamides. Part II: 5-membered Heterocyclic Substituents* (1988)

Volume 36: A.N. Paruta and R. Piekos, *4-Aminobenzenesulfonamides. Part III: 6-membered Heterocyclic Substituents and Miscellaneous Systems* (1988)

Volume 37: D.G. Shaw, *Hydrocarbons with Water and Seawater. Part I: Hydrocarbons C5 to C7* (1989)

Volume 38: D.G. Shaw, *Hydrocarbons with Water and Seawater. Part II: Hydrocarbons C8 to C36* (1989)

Volume 39: C.L. Young, *Cumulative Index: Volumes 20-38* (1989)

Volume 40: J. Hala, *Halides, Oxyhalides and Salts of Halogen Complexes of Titanium, Zirconium, Hafnium, Vanadium, Niobium and Tantalum* (1989)

Volume 41: C.-Y. Chan, I.N. Lepeshkov and K.H. Khoo, *Alkaline Earth Metal Perchlorates* (1989)

Volume 42: P.G.T. Fogg and W. Gerrard, *Hydrogen Halides in Non-aqueous Solvents* (1990)

Volume 43: R.W. Cargill, *Carbon Monoxide* (1990)

Volume 44: H. Miyamoto, E.M. Woolley and M. Salomon, *Copper and Silver Halates* (1990)

Volume 45/46: R.P.T. Tomkins and N.P. Bansal, *Gases in Molten Salts* (1991)

Volume 47: R. Cohen-Adad and J.W. Lorimer, *Alkali Metal and Ammonium Halides in Water and Heavy Water (Binary Systems)* (1991)

Volume 48: F. Getzen, G. Hefter and A. Maczynski, *Esters with Water. Part I: Esters 2-C to 6-C* (1992)

Volume 49: F. Getzen, G. Hefter and A. Maczynski, *Esters with Water. Part II: Esters 7-C to 32-C* (1992)

Volume 50: P.G.T. Fogg, *Carbon Dioxide in Non-aqueous Solvents at Pressures Less Than 200 kPa* (1992)

Volume 51: J.G. Osteryoung, M.M. Schneider, C. Guminski and Z. Galus, *Intermetallic Compounds in Mercury* (1992)

Volume 52: I. Lambert and H.L. Clever, *Alkaline Earth Hydroxides in Water and Aqueous Solutions* (1992)

Volume 53: C.L. Young, *Cumulative Index: Volumes 40-52* (1993)

Volume 54: W.E. Acree, Jr., *Polycyclic Aromatic Hydrocarbons in Pure and Binary Solvents* (1994)

Volume 55: S. Siekierski and S.L. Phillips, *Actinide Nitrates* (1994)

Volume 56: D. Shaw, A. Skrzecz, J.W. Lorimer and A. Maczynski, *Alcohols with Hydrocarbons* (1994)

Volume 57: W. Hayduk, *Ethene* (1994)

Volume 58: W.E. Acree, Jr., *Polycyclic Aromatic Hydrocarbons: Binary Non-aqueous Systems, Part I: Solvents A-E* (1995)

Volume 59: W.E. Acree, Jr., *Polycyclic Aromatic Hydrocarbons: Binary Non-aqueous Systems, Part II: Solvents F-Z* (1995)

Volume 60: A.L. Horvath and F.W. Getzen, *Halogenated Methanes with Water* (1995)

Volume 61: C.-Y. Chan, K.H. Khoo, E.S. Gryzlova and M.-T. Saugier-Cohen Adad, *Alkali Metal and Ammonium Perchlorates, Part I: Lithium and Sodium Perchlorates* (1996)

Volume 62: P. Scharlin, *Carbon Dioxide in Water and Aqueous Electrolyte Solutions* (1996)

Volume 63: H.U. Borgstedt and C. Guminski, *Metals in Liquid Alkali Metals, Part I: Be to Os* (1996)

Volume 64: H.U. Borgstedt and C. Guminski, *Metals in Liquid Alkali Metals, Part II: Co to Bi* (1996)

Volume 65: J.J. Fritz and E. Koenigsberger, *Copper(I) Halides and Pseudohalides* (1996)

Volume 66: J. Eysseltová and T.P. Dirkse, "Ammonium Phosphates," *J. Phys. Chem. Ref. Data*, 1998, 27, No. 6, 1289-1470

Volume 67: A.L. Horvath, F.W. Getzen and Z. Maczynska, "Halogenated Ethanes and Ethenes with Water," *J. Phys. Chem. Ref. Data*, 28, No. 2, 395-627

Volume 68: A.L. Horvath and F.W. Getzen, "Halogenated Aliphatic Hydrocarbon Compounds C<sub>3</sub> - C<sub>14</sub> with Water," *J. Phys. Chem. Ref. Data*, 28, No. 3, 649-777

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Volume 69: A. Skrzecz, D.G. Shaw and A. Maczynski, "Ternary Alcohol-Hydrocarbon-Water Systems," *J. Phys. Chem. Ref. Data*, 28, No. 4, 983-1236

Volume 70: Y. Yampol'skii, R. Paterson and P.G.T. Fogg, "Gases in Glassy Polymers," *J. Phys. Chem. Ref. Data*, 28, No. 5, 1255-1451

Volume 71: V. Sazonov, K.N. Marsh and G.T. Hefter, "Binary Nitromethane Systems" *J. Phys. Chem. Ref. Data*, 29, No. 5, 1165-1355

Volume 72: V. Sazonov, K.N. Marsh, D.G. Shaw, M.F. Chernysheva, N.V. Sazonov and H. Akaiwa, "Nitromethane with Water or Organic Solvents: Ternary and Quaternary

Systems," *J. Phys. Chem. Ref. Data*, 29, No. 6, 1447-1641

Volume 66 "Erratum:" J. Eysseltova and T.P. Dirkes, " Nitromethane with Water or Organic Solvents: Ternary and Quaternary Systems," *J. Phys. Chem. Ref. Data*, 29, No. 6, 1643-1644

Volume 73: Chr. Balarew, T.P. Dirkse, O.A. Golubchikov and M. Salomon, "Metal and Ammonium Formate Systems," *JPCRD*, submitted.

Volume 74: J. Hala, "Actinide Carbonates and Carbon-Containing Compounds," submitted.

Volume 75: H.U. Borgstedt and C. Guminski, "Nonmetals in Liquid Alkali Metals," submitted.

Volume 76: P.G.T. Fogg, *Ethyne*, submitted.

Volume 77: V. Sazonov and D.G. Shaw, *C2+ Nitroalkanes with Water or Organic Solvents: Binary and Multicomponent Systems*. Volume completed and undergoing final review. It will be submitted in either July or August 2001.

## 7. Database agreement

NIST expressed its interest to add already published SDS Volumes of high priority to the Chemistry Webbook for electronic access.

Here are some suggestions for the solubility systems that the E-I-C and Com. V.8. would like to see added to the webbook as soon as possible. The list is based on our impressions about which volumes are sold out and which systems we receive email questions about most frequently.

(1) CO, CO<sub>2</sub> and Carbonates. Data found in vols 43, 50, 62, 74\*, 45/46\* and 70\*.

(2) Hydrocarbons. Data in Vols 9, 24, 27/28, 37, 37, 54, 57, 58, 59, 76, 70\*.

(3) Atmospheric Gases. Data in Vols 4-8, 10, 45/46\*, 70\*

\*Not all the data in these volumes are on the indicated systems.

For some of these systems the published evaluations were made 20 years ago or more and really should be updated to include newer published measurements. In some cases our original evaluators are still active and have kept up with the literature so that updating would not be very difficult or time consuming. We should discuss this on a volume by volume basis.

8. Volumes for next year's SDS proposals, D. Shaw and M. Salomon

A volume as listed in the E-I-C's report in course of publication in JPCRD is presented below.

V. Sazonov and D.G. Shaw,  $C_{2+}$  Nitroalkanes with Water or Organic Solvents: Binary and Multicomponent Systems, JPCRD, ready for submission.

9. Status Report on the Textbook "The Experimental Determination of Solubilities" by R.P.T. Tomkins

PUBLISHER

A contract has been signed with John Wiley to publish the textbook.

STATUS OF CHAPTERS

CHAPTER	AUTHOR	STATUS
Preface	Hefter	Submitted; needs minor changes
Introduction	Lorimer	Not submitted
1.1 Thermodynamics	Lorimer/Cohen-Adad	Final draft still needed.
1.2 Kinetics	Christoffersen	Completed.
2.1 Low Pr. gases	Clever/Battino	Completed.
2.2 Gases in polymers	Yampolski/Paterson	Completed.
2.3 Gases in Molten Salts	Tomkins	Completed.
2.4 Gases in Solid Metals	Lewis/Sakamoto	Completed.
3. Liquids	Hefter	Draft copy - being reviewed.
4.1 Solids in Liquids	Cohen-Adad / Cohen-Adad	Final draft still needed.
4.2 Sparingly Soluble Solids in Liquids	Gamsjäger/Königsberger	Final draft still needed.
4.3 Aqueous Systems at high temps. & pr.	Valyashko/Churagulov	Completed.
4.4 Solids in molten and solid metals	Borgstedt/Guminski	Completed.



4.5 Solids in solids	Sangster	Completed.
5.1 Solids/liquids in promised for supercritical fluids	Fermeglia	Final version July 2001.
5.2 Solids/liquids in cryogenic liquids	Szczepaniec-Cieciak	Some editing needed.
5.3 Polymers in liquids	Krause	Completed.

#### OTHER COMMENTS

1. All contributors will need to add references to incorporate the period 1990-2000.
2. Manuscript should be completed by October 1, 2001.

#### 10. Project: Solubilities of Salts in Seawater - J. Lorimer, Ch. Balarew

The oceanic salt system comprises the ions  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Mg}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Cl}^-$  and  $\text{SO}_4^{2-}$ . Extended evaporitic deposits in Europe (Germany, Netherlands, Spain, France, Poland, Russia), Northern (Canada) and South America (Brasilia), Africa (Kongo) as well as in Asia had been formed from these ions during evaporation - crystallization processes of sea waters in geological times. Geological surveying of these deposits, their exploitation in potash mining, rock salt mining, fertilizer production, usage of rock salt mines as repository for nuclear or chemical wastes, all this requires the exact knowledge of solubility equilibria in the multi-component oceanic salt system within a broad range of temperatures. At present also solution mining of magnesium chloride for magnesium metal production is performed or in the stage of planning in a number of places world (Netherlands, Kongo, Thailand, Uzbekistan). In addition, evaporation and aerosol formation from oceans are important controlling factors for the worlds climate. Understanding of the details in coupling of evaporation and crystallization processes within the droplets transported into the upper atmosphere represents a crucial part for the formulation of material and energy exchange models. Climate changes from past time periods are manifested in the complex evaporitic deposition patterns, which are interpreted on the basis of the solid-liquid equilibria of the multi-component oceanic salt system.

An evaluation of the data in the complex system has to be based on a solid understanding of the phase equilibria in the subsystems. The solubilities of the alkaline metal halides in water have been evaluated already [1]. In a next step two further volumes will be completed, one with the remaining binary chloride systems and one important ternary chloride system ( $\text{MgCl}_2$ - $\text{CaCl}_2$ - $\text{H}_2\text{O}$ )

3. "Magnesium Chloride - Water and Calcium Chloride - Water and their Mixtures"

and the other one with the alkaline sulfates including ammonia sulfate.

#### 4. "Binary systems containing Sodium, Potassium and Ammonium Sulfate"

Ammonium Sulfate is added because of the importance in fertilizer industry, aerosol research and with respect to chemical logic.

#### Commission V.8, afternoon session, 1 July 2001

##### 11. Teaching of undergraduate students: Experimental and theoretical aspects - C. Magalhaes

Clara Magalhaes plans to write a book on teaching solubility phenomena to undergraduates. Colleagues who use simple and illustrative experiments on solubility phenomena in the classroom are requested to communicate with Clara.

##### 12. Reports of Subcommittees and Projects

###### 12.1. Subcommittee V.8.1 Report of Gas-Liquid Subcommittee by P. Scharlin (August 28, 2001)

Participants at the meeting of Gas-Liquid subcommittee in Brisbane: Pirketta Scharlin, Reg Tomkins and Justin Salminen (Observer, Helsinki University of Technology, Finland)

Old project numbers and titles are used here. The present status report is given after each project title.

After having learned of the new "project driven" IUPAC system the Gas-Liquid Subcommittee decided at the meeting, that three proposals could be submitted in autumn 2001. Two of them could be for non-funded projects and one for a funded project.

The two non-funded projects would be 581/39/96 and 581/15/89.

###### 39/96 CHEMICALS IN THE ATMOSPHERE: SOLUBILITIES IN AQUEOUS MEDIA

P.G.T. Fogg, J. Sangster Editors. This is a joint project with the Commission on Atmospheric Chemistry to produce a volume outside the SDS. The major portion of the book has been completed. Peter Fogg has informed that there is still a good chance of finishing the volume by the end of the year 2001.

15/89 FLUORIDES OF NOBLE GASES, BORON, NITROGEN, SULFUR,  
CARBON AND  
SILICON (other volatile fluorides may be included).

H.L. Clever, Editor; B. Jaselskis, Contributor. Estimated length 400 pages + index, preface etc. 310 data or evaluation sheets in camera-ready form but additional material has yet to be compiled. Prof. Clever has reported that 150 pages will be in electronic form by the time of Brisbane meeting. Expected completion July 31, 2002.

The proposal for a funded project would consist of three carbon dioxide projects (581/9/86, 581/20/89 and 581/40/97).

Gas-Liquid Subcommittee discussed that all those projects dealing with carbon dioxide (581/9/86, 581/20/89 and 581/40/97) could be combined as one "new" project for which we intend to apply for funding. The tentative title for this new project could be for example "CARBON DIOXIDE: COMPILED AND CRITICALLY EVALUATED SOLUBILITY DATA FOR INDUSTRIAL AND ENVIRONMENTAL APPLICATIONS".

Some of the old projects to be included in the new combined project should be renamed. As seen for instance from the status report of 9/86 below, in this old project the section closest to completion contains solubility data for CO<sub>2</sub> in lower alkanes (from methane to butane). It would be sensible to complete this section first and leave the higher alkanes for the future. The new title for 9/86 could then be for example "*Carbon Dioxide in Alkanes from Methane to Butane at Pressures above 2 bar*".

9/86 CARBON DIOXIDE IN NON-AQUEOUS SYSTEMS AT PRESSURES ABOVE 2 BAR

(data on COS to be included)

A.E. Mather, Editor; H.L. Clever, C.L. Young, Contributors. 230 compilation sheets in draft or camera ready form; 15 evaluation sheets in draft form: estimated length 290 pages:

According to the agreement with NIST, there is no minimum length for publications in JPCRD. Alan Mather wants to publish project 9/86 in smaller sections. The systems closest to completion are the lower alkanes (from methane to butane). The figures above refer to these systems. Alan Mather estimates June 2002 as the completion date for this section.

It might be sensible to split also the old project 20/89 into smaller sections. The section containing 1-or-more solutes in carbon dioxide could be included

in the new combined project and the section with carbon dioxide plus a co-solvent could be put off for the future. (This matter was discussed with Dana Knox after the Brisbane meeting.)

#### 20/89 SOLIDS AND LIQUIDS IN SUPERCRITICAL CARBON DIOXIDE

D. Knox, Editor (since 2000); (M. Fermeglia, Former editor); J. Mollerup, E. Brunner, C.G. de Azevedo, A.E. Mather, Contributors.

Dana Knox has stated the following facts:

*None of the references are more recent than 1997, and the most of them are even older. The more recent literature should be searched for additional entries. There are 0 pages completely finished. 58 pages would need only a modest amount of work. Another 240 require a fair amount of work. With the more recent literature included, there would be some 400-500 pages in the final volume, including solubilities of 1-or-more solutes in either carbon dioxide or carbon dioxide plus a co-solvent, but not including non-carbon dioxide systems. There is a substantial amount of work remaining, thus an optimistic completion date would be late 2002.*

#### 40/97 CARBON DIOXIDE IN AQUEOUS NONELECTROLYTE SOLUTIONS

P. Scharlin, Editor. 210 data sheets and 10 evaluation sheets in camera-ready and electronic form. Total data sheets estimated to be 280; total evaluation sheets 50. Search for a recent literature needs to be done. Estimation for completion 2003.

There are three projects far from completion at this point and hence to be put off for the future:

#### 18/89 NOBLE GAS UPDATE, from 1979

H.L. Clever, Editor. About 420 compilation sheets in camera ready form. Some are still on the old Pergamon laysheets, most of the sheets are in Wordstar-2000. Project 18/89 could be published in smaller sections. For example, Kr, Xe and Rn are essentially complete and up-to-date (192 data sheets). Ongoing project. However, Prof. Clever has stated that he is not working on this project until after he has finished project 15/89.

#### 31/91 CHLOROFLUOROCARBONS, HYDROGEN CHLOROFLUOROCARBONS AND

##### OTHER HALOCARBONS

H.L. Clever, Editor. Estimated length 370 pages + index, preface etc. 260 compilation sheets in camera-ready or draft form. Prof. Clever has indicated that the project could be divided into smaller sections. Ongoing project.

#### 38/95 PROPENE AND OTHER ALKENES AND DIALKENES WITH

## CYCLOPROPANE

H.L. Clever, Editor; C.L. Young, R. Popescu, Contributors. About 155 compilation sheets in camera ready form or draft form. No systematic literature search has been done. There is no estimate of total pages or completion date.

(This volume will contain data originally scheduled for TG 3/91; Cyclopropane).

Ongoing project.

There are two projects previously classified as tentative:

### TG 4/91 NITROGEN, OXYGEN AND AIR UPDATE.

Editor not selected. 150 data sheets in camera ready copy have been prepared. Systematic literature search has not been made. The data mentioned above have been picked up while doing other searches. There is no estimate of total pages or completion date.

### TG 5/91 ALKANE UPDATE

Editor not selected. H.L. Clever, C.L. Young, Contributors. About 150 data sheets in camera ready copy have been prepared.

There is one project with no project number:

### (No project number) UNCOMMON GASES FOR WHICH THERE ARE LITTLE DATA

Over 200 substances have boiling points below 298 K at 101.3 kPa. (see *Solubility of Gases in Liquids* by Fogg and Gerrard). Data on less important gases could be presented in one or more volumes. No progress.

## 12.2. Subcommittee V.8.2 Liquid/Liquid Systems - A. Skrzecz

Present:

Adam Skrzecz (Poland) Chairman

Urszula Domanska-Zelazna (Poland)

Glenn Hefter (Australia)

Ken Marsh (New Zealand)

Vera Myasedova (Russia)

David Shaw (USA)

The progress between the Subcommittee meetings (2000.07.23 - 2001.06.30) and status of the volumes have been discussed.

## 1. Volumes Completed.

**Nitromethane with Water or Organic Solvents; Binary Systems.**

**Editors: K. Marsh, V.P. Sazonov, G. Hefter. (TL5/91)**

This volume is the first of the three containing nitroalkanes. All needed editorial improvements have been done by V. Sazonov, A. Skrzecz, and D. Shaw. The volume has been transferred by M. Salomon in June 2000 to the publisher and has been published as the volume 71 of the SDS in Journal of Physical and Chemical Reference Data, 29(5), 1165 (2000).

**Nitromethane with Water or Organic Solvents; Ternary and Quaternary Systems.**

**Editors: D. Shaw, K. Marsh, V.P. Sazonov (TL5/91)**

This volume is the second one of the three containing nitroalkanes. The volume has been checked by D. Shaw and A. Skrzecz, and V. Sazonov has prepared the final version. The volume has been transferred by M. Salomon in December 2000 to the publisher and has been published as the volume 72 of the SDS in Journal of Physical and Chemical Reference Data, 29(6), 1447 (2000).

**C2+ Nitroalkanes with Water or Organic Solvents; Binary and Multicomponent Systems.**

**Editors: D. Shaw, K. Marsh, V.P. Sazonov (TL5/91)**

(old title: "Nitroethane and other Nitroalkanes with Water or Organic Solvents; Binary, Ternary and Quaternary Systems")

This volume is the last in the series of the three volumes containing nitroalkanes. The volume has been checked by D. Shaw and A. Skrzecz and the final version has been prepared by V. Sazonov. The volume (printout and files) has been sent the SDS Editor-in-Chief in May 2001 and it will be published as the volume 77 of the SDS in Journal of Physical and Chemical Reference Data, in 2001.

## 2. Volumes in Progress

**Polystyrene: Polymers and Oligomers**

**Editors: S. Krause, H. Grunbauer, A. Imre (4/85)**

The volume is in on-going category. The literature from the 1970-1999 period has been collected. Part of the tables is ready as CRC form. Expected number of compilations and evaluations - over 1000 pages.

No information was obtained about the volume and progress in last time. There is a suggestion to prepare the new project submission form after a contact with dr. Imre and Prof. S. Krause.

**Cellulose and its Derivatives in Various Solvents.**

Editors: V.V. Myasoedova, S. Krause

The volume is very close to the end but the final decision will be made in September 2001 by prof. Myasoedova. In the case when the volume will be not ready before December 31, 2001, the project submission form (without financial support) will be needed.

### 12.3. Subcommittee V.8.3 Solid/Liquid Systems - W. Voigt

#### 1. Current Programs

##### 1.1. Projects listed in IUPAC's Handbook (Blue Book, Version ..... p.229-230)

7 approved volume projects are listed in the Blue Book;

583/24/89 - Alkaline Earth Metal Carbonates;  
will be completed in the framework of a new proposal

583/25/89 - Oceanic Salt Systems and Related Systems: Part I: Binary systems containing  $\text{Na}_2\text{SO}_4$ ,  $\text{K}_2\text{SO}_4$  and  $(\text{NH}_4)_2\text{SO}_4$  will be completed in the framework of a new proposal

583/33/91 - Alkali Metal and Ammonium Perchlorates: Part II)  
will be completed in the framework of a new proposal

583/22/89 - Alkali Metal Hydroxides;  
will be completed in the framework of a new proposal

583/34/92 - IA and IIA Azides, Cyanates, Cyanides and Thiocyanides  
„frozen“ project

583/40/92 - Molten Alkali & Alkaline Earth Metal Sulfates, Binary Systems) was agreed within the commission to remove from the official list at Hammamet meeting year 2000

583/6/87 - Fatty Acid Salts in Nonaqueous Binary Systems  
agreed within the commission to remove from the official list a Hammamet meeting year 2000

##### 1.2. Projects not listed in the Blue Book of IUPAC

583/17/91 - Solubility of Hydroxybenzoic Acid and Hydroxybenzoates has an official registration number, but was not listed in the Blue Book

##### Projects in the course of publication

TS 20/91 - Non-metallic Substances in Liquid Alkali Metals (H. U. Borgstedt, C. Guminski)

needs official project number and listing

Actinide Carbonates and Carbon-containing Compounds (J. Hala, M. Salomon)

needs official project number and listing

TS 15/91 Metal Formates (Ch. Balarew, T.P. Dirkse)

needs official project number and listing

### 1.3. Status of presently active projects

There are 10 projects in an advanced state on which compilers and evaluators are actively working.

1 TS 4/91 Transition Metal, Lanthanide and Ammonium Halates:  
Vol. 4

2 583/17/91 Solubility of Hydroxybenzoic Acid and  
Hydroxybenzoates

3 583/24/89 Alkaline Earth Metal Carbonates

4 TS 16/91 Metal Carbonates (Mn, Fe, Co, Ni, Cu, Zn, Ag, Cd, Hg,  
Pb)

5 TS 10/91 Alkali and Alkaline Earth Metal and Ammonium  
Tungstates and Molybdates

6 583/33/91 Alkali Metal and Ammonium Perchlorates

7 TS 1/98 Solubility of Substances related to Urolithiasis

8 583/22/89 Alkali Metal Hydroxides

9 583/25/89 Oceanic Salt Systems and Related Systems. Part I.  
Binary systems containing  $\text{Na}_2\text{SO}_4$ ,  $\text{K}_2\text{SO}_4$  and  
 $(\text{NH}_4)_2\text{SO}_4$

10 583/25/89 Part II. Oceanic Salt Systems and Related Systems.  
Binary systems Magnesium and Calcium chloride

### 1.4. Volumes waiting for up-dateing and revision

A Polychlorinated Biphenyls (Acree)

B Polyaromatic Hydrocarbons (Acree)

C Lanthanide halides

D Lanthanide sulfates

E „Pharmaceuticals“

F Alkali metal cyanides, cyanates and thiocyanates

G Ternary Alkali metal chlorides, bromides, and iodides



## 2. Creation of Task groups

The subcommittee discussed the possibilities to continue the work of compiling and evaluating important solubility data within the new structure of IUPAC. Thereby it was outlined, that successful work requires that scientists with relevant expertise have to be included, also if they are presently not member of a certain task group. In this respect the external funding by NIST is important. The editor in chief and the subcommittee chair should decide about the appropriate use of this funding.

It was suggested to prepare 3 proposals for funding and 2 non-funded proposals (that is 5 task groups). Task members printed in bulk letters are responsible for project formulation and application. First of all project formulation was directed toward completion of volumes.

### 1. „Solubility Data of Compounds relevant to Mobility of Metals in Environment“

H. Gamsjäger, M.C. Magalhaes, Jan Vanderdeelen, Sawada, E. Königsberger, J. Hala, Churagulov, M. Salomon, J. Lorimer

Volumes: Nr 3 + 4 + „Actinide carbonates and carbon-containing compounds“.

For this project the possible inclusion of other compounds (new volume projects, like phosphates) was discussed.

Funding: 8.000 - USD 2002 - 2004 (3 years)

### 2. „Solubility Data of Compounds relevant to human health“

E. Königsberger, L.C. Königsberger, M. Salomon, R. Goto, A. Goto, M. Makino, Miyamoto, J. Sangster, Blashko

Volumes : Nr. 2 + 8 + A + B (R. and A. Goto suggested an extending to halogenated aromatics in general and gave evidence that relevant work is under way by M. Makino already)

Funding: 5000,- USD

### 3. „Solubility Data of Sea Water Type Systems“

II. Alkaline earth metal chloride - water systems (Vol. 9 ext.) The volume is extended by addition of SrCl<sub>2</sub> and BaCl<sub>2</sub>

III. Alkaline metal chloride - water systems (Vol. 10 ext.)

Ch. Balarev, M. Salomon, R. + M.-Th. Cohen-Adad, R. Bouaziz, St.

Tepavicharova, N. Aryguib, J. Lorimer, Eysseltova, W. Voigt

Funding : 5000,- USD

4. „Solubility data of some alkali metal compounds related to industrial processes”

M.-Therese Cohen-Adad ( V. Valyashko, R. Cohen-Adad, J. Sangster)

Volumes: 5 + 6 + 7

Funding : 2000,- USD

5. Czesary Guminski ( Mioduski, H. Voigt, Miyamoto)

Title to be defined

Volumes : C + D + 1

Funding : 2000,- USD

W. Voigt July 2001

Sub-Committee chair

12.4 Need for new contributors

There is a need for new contributors.

13. The 2<sup>nd</sup> Meeting of the Subcommittee of Solubility and Equilibrium Data (the name of the successor of Com.V.8) will be held in conjunction with the 42<sup>nd</sup> IUPAC General Assembly (August 8-17, 2003) in Ottawa, Canada.

14. Future International Symposia on Solubility Phenomena

Christo Balarew will organize the next ISSP in Bulgaria.

2002: 10<sup>th</sup> ISSP, Varna - Bulgaria

For 2004 the offer of Clara Magalhaes to host the ISSP in Aveiro was gratefully accepted.

2004: 11<sup>th</sup> ISSP - Aveiro, Portugal.

The venue for 2006 should be in Europe again.

2006: 12<sup>th</sup> ISSP - Tentatively Freiberg/Saxonia, Germany was proposed.

15. Reports of National Representatives

No report

16. 28th Annual Meeting (1<sup>st</sup> of SSED) will be held in conjunction with the 10<sup>th</sup> ISSP and Workshop "Solubility Phenomena Application for Environmental

Improvement", July 22 - 26, 2002, Varna-St.St. Constantine and Helen resort, Bulgaria .

19. Adjournment

The meeting was adjourned at 17:05, July 1, 2001.

27<sup>th</sup> Annual Meeting of Commission V.8 - Attendance List  
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