

14^{èmes} JOURNEES DES ACTINIDES

2 - 3 April 1984

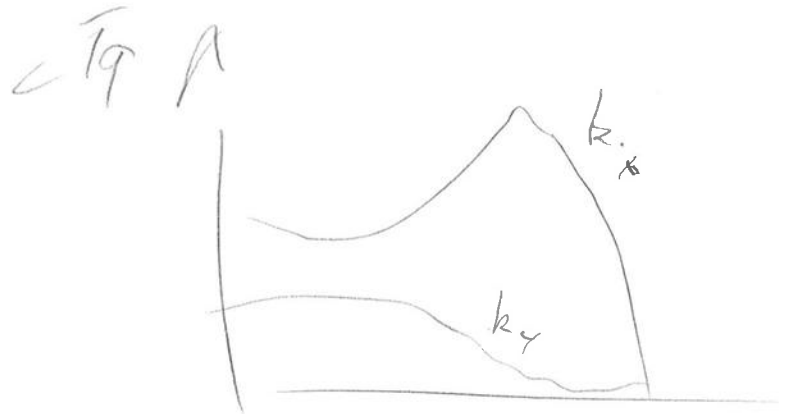
DAVOS SWITZERLAND

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1984
14^{ES} JOURNÉES
DES ACTINIDES

PROGRAM, ABSTRACTS

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PROGRAM, ABSTRACTS LIST OF PARTICIPANTS

SPONSORS

Swiss Academy of Sciences (SNG)
National Energy Research Foundation (NEFF)
Swiss Federal Institute of Technology Zürich (ETH)

ORGANIZING COMMITTEE

J. Schoenes chairman, O. Vogt, P. Wachter
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P R E F A C E

The "14èmes Journées des Actinides" will be held from April 2 to April 3, 1984 in Davos, Switzerland. It will continue the tradition of the previous Journées des Actinides to provide a forum for the presentation and the discussion of the most recent results in the field of the physics and the chemistry of the Actinides. To emphasize this interplay between physics and chemistry we have grouped the papers according to the chemical properties of the materials and not the physical method of investigation.

To date, 83 scientists have registered and 53 papers have been submitted. Besides eight oral sessions, we have arranged a poster session for those authors who preferred this kind of presentation. The poster session includes papers on nearly all subjects on which also oral sessions are taking place. The oral contributions are scheduled to last 12 min. and 3 min. for discussion. To encourage the presentation of additional post-deadline contributions as well as a more general and informal discussion we have foreseen also three special discussion sessions.

On the other hand many contributions are very elaborate and of high scientific value making them suitable for publication in the proceedings. In time of difficult financial funding the record of active participation is for many of us a "conditio sine qua non".

The "14èmes Journées des Actinides" are sponsored by the Swiss Academy of Sciences (SNG), the National Energy Research Foundation (NEFF) and the Swiss Federal Institute of Technology Zürich (ETHZ) which is gratefully acknowledged. Special thanks are due to Miss A. Bütikofer and Mrs. P. Dekumbis, K. Mattenberger and H.P. Staub for their technical help in the organization of this conference.

I thank the director of the Hotel Sunstar Park for his cooperation and I wish all participants a pleasant stay in Davos, in order to make these Journées des Actinides, held for the first time in Switzerland, a social as well as a scientific success.

Joachim Schoenes

5. March 1984

P R O G R A M

SUNDAY, 1 APRIL 1984

16.30 - 19.30 REGISTRATION

19.30 - 20.00 WELCOME COCKTAIL

20.00 DINNER

21.30 - 22.00 REGISTRATION (CONT.)

MONDAY, 2 APRIL 1984

9.00 - 9.15 OPENING SESSION

CHAIRPERSON: J. SCHOENES

WELCOME ADDRESS: P. WACHTER

9.15 - 10.30 SESSION I: NaCl-Type COMPOUNDS

CHAIRPERSON: J. ROSSAT-MIGNOD

1. *MAGNETIZATION DENSITY OF 5f ELECTRONS IN FERRO-MAGNETIC PuSb*
G.H. Lander, A. Delapalme, P.J. Brown, J.C. Spirlet and O. Vogt
2. *MAGNETIC STRUCTURE AND EXCITATION BEHAVIOR IN HIGHLY ANISOTROPIC PLUTONIUM SYSTEMS*
A. Banerjea, B.R. Cooper and P. Thayambali
3. *MAGNETIZATION MEASUREMENTS ON MONOCRYSTALLINE NpAs*
J. Rébizant, J.C. Spirlet, K. Mattenberger and O. Vogt
4. *MAGNETIC EXCITATIONS IN USb*
B. Hälg, A. Furrer and O. Vogt
5. *ELASTIC CONSTANTS OF URANIUM MONOCHALCOGENIDES*
J. Neuenschwander, H. Boppart, J. Schoenes, E. Voit O. Vogt and P. Wachter

10.30 - 11.00

COFFEE BREAK

11.00 - 12.00

SESSION II: PSEUDOINARY NaCl-TYPE COMPOUNDS

CHAIRPERSON: P. WACHTER

1. *MAGNETIC EXCHANGE AND SPIN-POLARIZATION IN URANIUM-MONOPNICTIDES*
W. Reim, J. Schoenes and O. Vogt
2. *HEAT CAPACITY STUDY OF ThP AND SOLID SOLUTION*
UP_{0.5}As_{0.5}
A. Blaise, J. Gordon and R. Troc
3. *TRANSPORT PROPERTIES OF THE PSEUDOINARY*
SYSTEM USb_xTe_{1-x}
B. Frick, J. Schoenes and O. Vogt
4. *THE MAGNETIC PHASE DIAGRAM OF THE UP-US SYSTEM:*
UNSOLVED PROBLEMS
M. Kuznietz

12.00 - 12.30

GENERAL DISCUSSION OF SESSIONS I AND II

12.30 - 14.00

LUNCH BREAK

14.00 - 14.45

SESSION III: SYNTHESIS AND CHARACTERIZATION

CHAIRPERSON: R. TROC

1. *THE CRYSTAL GROWTH OF SOME URANIUM INTERMETALLICS*
A. Menovsky and J.J.M. Franse
2. *NpGa₄ - A NEW INTERMETALLIC COMPOUND*
D. Dayan, J. Gal and M.P. Dariel
3. *SYNTHESIS AND CHARACTERIZATION OF URANIUM-*
CONTAINING MIXED OXIDE CATALYSTS: U-Sb-O, U-Bi-O
H. Collette, S. Maroie, Z. Gabelica, J. Verbist

also 2 Posters: see session IX 1 and 2

14.45 - 15.45

SESSION IV: ELEMENTARY METALS

CHAIRPERSON: B.R. COOPER

1. *REGULARITY OF THE COHESIVE ENERGY OF THE LANTHANIDE ELEMENTS*
B. Johansson and P. Munch
2. *EQUATION OF STATE OF Pu METAL AT FINITE TEMPERATURES*
B. Johansson and M.S.S. Brooks
3. *CHARACTERIZATION OF f-ELECTRONS IN LIGHT LANTHANIDE AND ACTINIDE METALS BY ELECTRON ENERGY LOSS AND X-RAY PHOTOELECTRON SPECTROSCOPY*
H.R. Moser, B. Delley, W.D. Schneider and Y. Baer
4. *EVIDENCE FOR 6d VALENCE STATES IN URANIUM AS REVEALED BY RESONANT PHOTOEMISSION*
B. Reihl, M. Domke, G. Kaindl, G. Kalkowski and C. Laubschat

15.45 - 16.15

COFFEE BREAK

16.15 - 17.15

SESSION V: INTERMETALLICS

CHAIRPERSON: B. JOHANSSON

1. *A NEPTUNIUM HEAVY FERMION SYSTEM: NpBe₁₃*
G.R. Stewart, Z. Fisk, J.O. Willis, M.S. Wire and J.L. Smith
2. *RESISTIVITY MEASUREMENTS ON URANIUM-PLATINUM COMPOUNDS; MAGNETIC ORDER, SPIN FLUCTUATIONS, SUPERCONDUCTIVITY*
A. de Visser, J.J.M. Franse and A. Menovsky
3. *X-RAY DIFFRACTION STUDY OF NpOs₂ AT HIGH PRESSURE*
J. Zänkert, U. Potzel, J. Moser, W. Potzel, Th. Obenhuber, G.M. Kalvius and J. Gal
4. *LOW TEMPERATURE SWITCHES-ON THE MAGNETIC HYPERFINE SPLITTING IN THE ITINERANT ELECTRON MAGNETIC LAVES PHASE COMPOUNDS: A BIZARRE PHENOMENON*
J. Gal, S. Fredo, W. Potzel, L. Asch and G.M. Kalvius

also 3 Posters: see session IX 3 - 5

17.15 - 17.45

GENERAL DISCUSSION OF SESSIONS III - V

19.30

CONFERENCE DINNER

TUESDAY, 3 APRIL 1984

9.00 - 10.30

SESSION VI: CHARACTERIZATION OF COMPLEX
STRUCTURES

CHAIRPERSON: M. PAGÈS

1. *MOESSBAUER AND RELATED STUDIES ON NEPTUNYL COMPLEXES*
R. Marquart, C.D. Werner, F. Weigel, W. Potzel,
L. Asch, G.M. Kalvius and J.C. Spirlet
2. *MAGNETIC PROPERTIES OF NEPTUNOCENE, $Np(C_8H_8)_2$*
R. Bohlander, B. Kanellakopoulos, R. Klenze and
H.D. Amberger
3. *SINGLE CRYSTAL EPR OF $^{237}Np(BH_3CH_3)_4$ IN $Zr(BH_3CH_3)_4$*
E. Gamp and N. Edelstein
4. *COMPLETE SPIN-ORBIT AND CRYSTAL FIELD TREATMENT OF
 3H GROUND TERM OF THE $5f^2$ CONFIGURATION IN OCTA-
HEDRAL SYMMETRY FOR MAGNETIC SUSCEPTIBILITY DATA
INTERPRETATION*
W. Beckman and J. Goffart
5. *STRUCTURAL CHEMISTRY OF ACTINIDE COMPOUNDS WITH
COORDINATION NUMBERS 7, 8 AND 10*
G. Bombieri, F. Benetollo, E. Forsellini and A. Del Pra
6. *AN EXPERIMENTAL STUDY OF COVALENCY IN COORDINATION
COMPOUNDS OF f ELEMENTS*
A.A. Pinkerton

10.30 - 11.00

COFFEE BREAK

11.00 - 12.30

SESSION VII: DI - & TRICHALCOGENIDES AND TRICHLORIDES

CHAIRPERSON: G. LANDER

1. EXPERIMENTAL EVIDENCE FOR A TRIPLE - \vec{k} ORDERING
IN UO_2
J. Rossat-Mignod, P. Burlet, S. Quézel, J.C. Spirlet
J. Rebizant and W. Müller
2. SPECIFIC HEAT OF THE U AND Th OXYCHALCOGENIDES
 $AnOY$ ($An = U, Th; Y = S, Se$)
G. Amoretti, A. Blaise, J.M. Collard and R. Troc
3. MAGNETIC PROPERTIES OF $UAsY$ COMPOUNDS ($Y = S, Se, Te$)
AS OF A FERROMAGNETIC TWO SINGLET SYSTEM
P.J. Markowski
4. MAGNETIC AND ELECTRICAL PROPERTIES OF $NpSbTe$ AND
 $NpAsTe$
A. Blaise, J.M. Collard and J.M. Fournier
5. ARE URANIUM TRICHALCOGENIDES THE LOW DIMENSIONAL
MAGNETS ?
M. Renucci, A. Zwick, G. Landa, G. Mischler, W. Suski,
and B. Janus
6. UNUSUAL LOW TEMPERATURE MAGNETIC PROPERTIES OF UCl_3
A. Murasik, P. Fischer and W. Szczepaniak

also 3 Posters: see session IX 7 - 9

12.30 - 14.00

LUNCH BREAK

14.00 - 15.15

SESSION VIII: ORGANOMETALLIC COMPOUNDS AND SOLUTION
CHEMISTRY

CHAIRPERSON: G. Bombieri

1. CATALYTIC HYDROGENATION OF ALKYNES BY TRIVALENT
URANIUM COMPOUNDS
L. Arnaudet and G. Folcher
2. INSERTION OF VARIOUS ALKYL ISOCYANIDES INTO THE
URANIUM-TO-CARBON SINGLE BONDS OF $(\eta^5-C_5H_5)_3U$
(IV)-ALKYL SYSTEMS
G. Paolucci, G. Rossetto, P. Zanella and R.D. Fischer
3. ACTINIDE NEW EXTRACTANTS
C. Musikas

4. A NEW PROCESS FOR THE RECOVERY OF THE URANIUM FROM WET METHOD PHOSPHORIC ACID BY NEW TYPES OF CATION EXCHANGER SOLVANTS AND RESINS
P. Blanquet, F. Ricalens and J.P. Silvestre

5. STABILITY CONSTANTS OF NEPTUNIUM (V) BENZENE POLYCARBOXYLATES COMPLEXES
S. Dabos, F. Nectoux, A. Cousson, M. Pagès

also 7 Posters: see session IX 10 - 16

15.15 - 15.45

DISCUSSION SESSIONS VI- VIII

15.45 - 16.15

COFFEE BREAK

16.15 - 18.00

SESSION IX: POSTER

CHAIRPERSON: O. VOGT

1. THE PREPARATION OF SINGLE CRYSTALS OF NEPTUNIUM Pnictides
J.C. Spirlet, C. Rijkeboer, W. Müller, L. Martinot, O. Vogt and K. Mattenberger
2. SYNTHESIS AND STRUCTURE OF $(C_2H_5)_4 N UO_2(N_3)_3$
J. Livet, P. Charpin and C. Musikas
3. SPECIFIC HEAT MEASUREMENTS ON U_6Co
J.C.P. Klaasse, A. Menovsky and J.J.M. Franse
4. PHOTOEMISSION STUDY OF SURFACE LAYERS ON $PuFe_2$
J. Ghijsen, J.C. Spirlet and J. Naegele
5. ELECTRON ENERGY LOSS SPECTROSCOPY ON POLYCRYSTALLINE UFe_2 EXPOSED TO HYDROGEN UNDER LOW PRESSURE
T. Gouder and J. Verbist
6. NEUTRON DIFFRACTION STUDY OF $\beta-UD_3$ and $\beta-UH_3$
W. Bartscher, J. Rebizant, A. Boeuf, R. Caciuffo, F. Rustichelli and J.M. Fournier
7. MOESSBAUER AND CRYSTALLOGRAPHIC STUDIES OF THE $BaF_2 - NpF_3$ SYSTEM
H. Abazli, J. Jové, A. Cousson and M. Pagès
8. OPTICAL PROPERTIES OF U^{4+} IN THE $ThBr_4$ INCOMMENSURATE STRUCTURE
P. Delamoye

9. LIFETIME MEASUREMENTS OF THE FLUORESCENCE LEVELS OF U^{4+} IN THE INCOMMENSURATE PHASE OF $ThCl_4$
J.C. Krupa, C. Khan Malek and M. Genet
10. STRUCTURE OF THE TRIS (CYCLOPENTADIENYL) URANIUM (IV) HALIDES: $(C_2H_5)_3UCl$ AND $(C_5H_5)_3 UBr$
J. Rebizant, G.D. Andreetti, M.R. Spirlet, B. Kanellakopoulos and E. Dornberger
11. N,N DIALKYLAMIDES AS U(VI) EXTRACTANTS
N. Descouls and C. Musikas
12. SPECTROPHOTOMETRIC INVESTIGATION OF THE REDOX REACTIONS OF NEPTUNIUM IN NITRIC ACID SOLUTIONS
R. Gauthier and K.H. Lieser
13. INHIBITION DE LA FLUORESCENCE DE L'URANIUM PAR L'EUROPIUM
P. Mauchien, présenté par Ph. Cauchetier
14. MONO AND BINUCLEAR URANYL (VI) COMPLEXES WITH NEW ACYCLIC AND CYCLIC SCHIFF BASES
U. Casellato, D. Fregona, S. Sitran, S. Tamburini and P.A. Vigato
15. SPECIATION OF Am (III) IN CONCENTRATED CARBONATE SOLUTIONS
R.F.D. Lundqvist
16. ACTINIDE COMPLEX FORMATION WITH BIOLOGICALLY IMPORTANT LIGANDS
A. Strezov, presented by R.F.D. Lundqvist

18.00 - 19.00

SESSION X: CONFERENCE SUMMARY AND PERSPECTIVES

CHAIRPERSON: W. MUELLER

19.30 - 21.00

DINNER

21.00 - 22.00

RESEARCH ON SNOW AND AVALANCHES IN DAVOS

W. Good

MONDAY APRIL 2

TUESDAY APRIL 3

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| 09.15-10.30 | I - NaCl type compounds | 10 | | | |
| 10.30-11.00 | COFFEE BREAK | | 10.30-11.00 | COFFEE BREAK | |
| 11.00-12.00 | II Pseudobinary NaCl type comp. | | 11.00-12.30 | VII Di- & Trichalcogenides and Trichlorides | 57 |
| 12.00-12.30 | Discussion Sessions I + II | | | | |
| 12.30-14.00 | LUNCH BREAK | | 12.30-14.00 | LUNCH BREAK | |
| 14.00-14.45 | III Synthesis | 27 | 14.00-15.15 | VIII Organometallic Compounds & Solution Chemistry | 69 |
| 14.45-15.45 | IV Elementary Metals | 32 | 15.15-15.45 | Discussion Sessions VI - VIII | |
| 15.45-16.15 | COFFEE BREAK | | 15.45-16.15 | COFFEE BREAK | |
| 16.15-17.15 | V Intermetallics | 39 | 16.15-18.00 | Poster | 78 |
| 17.15-17.45 | Discussion Sessions III - V | | 18.00-19.00 | SUMMARY & PERSPECTIVES | |
| 19.30 | CONFERENCE DINNER | | 19.30-21.00 | DINNER | |
| | | | 21.00-22.00 | W. Good "Research on Snow and Avalanches in Davos" | |