

HTMC 2006

Program

of the

12th International IUPAC-Conference on

**HIGH TEMPERATURE
MATERIALS CHEMISTRY**

HTMC XII

September 17th-22th, 2006

Vienna, Austria

Monday, September 18, 2006

Morning Session Chair: J. C. Schuster / Y. Du

09.00 – 09.30 **Opening**

Plenary Lecture

09.30 – 10.10 PL1 *K. Consemüller*
DO UNIVERSITIES PREPARE FOR INDUSTRIAL CAREERS?

Communications

10.10 – 10.30 O1 *Y. K. Rao*
CHEMICAL VAPOUR DEPOSITION OF WSi_2 THIN FILMS:
EQUILIBRIUM W-Si-H-Cl-Ar System

10.30 – 10.50 O2 *A. Ciccioli, G. Gigli, G. Meloni*
ON THE BOND ENERGY OF THE GROUP 14
HETERONUCLEAR DIATOMICS

10.50 – 11.20 **Coffee Break**

11.20 – 11.40 O3 *M. Zinkevich, M. Cancarevic, F. Aldinger*
STUDY OF REACTIVITY BETWEEN Cu AND $Pb(Zr,Ti)O_3$

11.40 – 12.00 O4 *T. Abe, Y. Chen, Y. Yamabe-Mitarai, H. Numakura*
THERMODYNAMIC MODELING OF THE IRIDIUM-NIOBIUM
SYSTEM

12.00 – 12.20 O5 *H. Flandorfer, C. Schmetterer, H. Ipser*
THE Ni-Sn AND Ni-Ga INTERMETALLIC SYSTEMS: PHASE
RELATIONS AND ENTHALPY OF MIXING

12.20 – 12.30 TECHNICAL INFORMATION – ELSEVIER, ETC.

12.30 – 14.00 **Lunch**

Monday, September 18, 2006

Afternoon Session Chair: M. H. Braga / S. Gruner

Plenary Lecture

14.00 – 14.40 PL2 *R. Hu, P. Nash*
ENTHALPIES OF FORMATION IN Al-Ni-X SYSTEMS

Communications

14.40 – 15.00 O6 *S. Delsante, N. Parodi, G. Borzone*
THERMOCHEMISTRY OF SELECTED R-T-Al (R= RARE EARTH,
T= Ni, Pd) ALLOYS

15.00 – 15.20 O7 *K. Masuda-Jindo, V. V. Hung, P.E.A. Turchi*
FIRST PRINCIPLES CALCULATIONS OF THERMODYNAMIC AND
MECHANICAL PROPERTIES OF HIGH TEMPERATURE BCC Ta-W
AND Mo-Ta ALLOYS

15.20 – 15.40 O8 *E. Povoden, A.N. Grundy, L.J. Gauckler*
THERMODYNAMIC ASSESSMENT OF THE La-Mn-Cr-O SYSTEM
FOR APPLICATIONS ON SOLID OXIDE FUEL CELL (SOFC)
MATERIALS

15.40 – 16.40 **Coffee Break and Poster Session**

16.40 – 17.00 O9 *I. Katayama, T. Oishi, H. Yamashita*
ACTIVITY MEASUREMENT OF Ga IN Fe-RICH SOLID Fe-Ga
ALLOYS BY EMF METHOD WITH STABILIZED ZIRCONIA

17.00 – 17.20 O10 *N. Sasajima, Y. Yamada, Y. Wang, P. Bloembergen, T. Wang,
J. Le Coze*
MELTING AND FREEZING BEHAVIOR OF THE IRON-CARBON
EUTECTIC SYSTEM

17.20 – 17.40 O11 *A.I. Zaitsev*
THE QUANTITATIVE CRITERIA OF TENDENCY OF METAL
ALLOYS TO AMORPHIZATION

17.40 – 18.00 O12 *K. Yamaguchi, Y.-C. Song, K. Itagaki*
THERMODYNAMIC INVESTIGATION OF THE Cu-Zr BINARY
ALLOY BY CALORIMETRY

Tuesday, September 19, 2006

Morning Session Chair: I. Katayama / K.-D. Becker

Plenary Lecture

09.00 – 09.40 PL3 *L. Hennet*
STRUCTURE AND DYNAMICS OF LEVITATED LIQUID MATERIALS

Communications

09.40 – 10.00 O13 *M. Jiménez-Ruiz, M.D. Ruiz-Martín, G.J. Cuello, R. Fernandez-Perea, F.J. Bermejo*

HIGH FREQUENCY COLLECTIVE EXCITATIONS IN MOLTEN Fe/Ni ALLOYS STUDIED BY INELASTIC NEUTRON SCATTERING

10.00 – 10.20 O14 *S. Takeda, H. Fujii, Y. Kawakita, S. Tahara, S. Nakashima, S. Kohara, M. Ito*

STRUCTURE OF EUTECTIC LIQUIDS BETWEEN NOBLE METAL-IVB ELEMENTS

10.20 – 10.40 O15 *R. Novakovic, E. Ricci*
SURFACE AND TRANSPORT PROPERTIES OF Ni-Ti LIQUID ALLOYS

10.40 – 11.10 **Coffee Break**

11.10 – 11.30 O16 *Y. Plevachuk, V. Sklyarchuk, O. Alekhin, L. Bulavin*
VISCOSITY OF LIQUID In-Tl-Se ALLOYS IN THE MISCIBILITY GAP REGION

11.30 – 11.50 O17 *H.-J. Hoffmann*
WHAT MAKES SOLIDS MELT?

11.50 – 12.10 O18 *F. Demmel, W.C. Pilgrim, S. Hosokawa*
ANOMALOUS SOUND PROPAGATION IN MOLTEN SALTS

12.10 – 12.30 O52 *S. G. Fries*
HUME-ROTHERY IDEAS IN MIND, DFT IN THE COMPUTER, A SAMPLE IN THE CALORIMETER, RIETVELD PLANNED: INTERMETALLIC PHASES UNVEIL

12.30 – 14.00 **Lunch**

Tuesday, September 19, 2006

Afternoon Session Chair: J. Vřešťál / K. Richter

Plenary Lecture

14.00 – 14.40 PL4 *N. Sobczak, A. Kudyba, R. Nowak, W. Radziwill*
THE FACTORS AFFECTING WETTABILITY AND BOND STRENGTH OF SOLDER JOINT COUPLES

Communications

14.40 – 15.00 O20 *J. Drápala, A. Kroupa, J. Vřešťál, P. Zlatohlávek*
PHASE EQUILIBRIA AND THERMODYNAMIC MODELING IN THE Cu-In-Sn SYSTEM

15.00 – 15.20 O21 *I. Ohnuma, Y. Takaku, K. Makino, R. Kainuma, K. Ishida*
APPLICATION OF ADAMIS (ALLOY DATABASE FOR MICRO-SOLDERS) FOR ALLOY DESIGN OF Zn-BASE HIGH-TEMPERATURE LEAD-FREE SOLDERS

15.20 – 15.40 O22 *S. Gruner, W. Hoyer*
VISCOSITY OF LIQUID Cu-Sn AND Ag-Cu-Sn ALLOYS

15.40 – 16.40 **Coffee Break and Poster Session**

16.40 – 17.00 O23 *U. Fastner, G.E. Nauer*
ELECTROCHEMICAL DEPOSITION PROCESSES IN HIGH TEMPERATURE MOLTEN SALTS

17.00 – 17.20 O24 *Z. Li, S. Knott, A. Mikula*
INVESTIGATIONS OF VARIOUS PROPERTIES OF THE TERNARY Cu-In-Sn SYSTEM

17.20 – 17.40 O25 *E. Ricci, S. Amore, T. Lanata, R. Novakovic*
SURFACE TENSION AND WETTING BEHAVIOUR OF Cu-Sn MOLTEN ALLOYS

17.40 – 18.00 O26 *A. Kudyba, R. Nowak, N. Sobczak., H. Ipser, A. Mikula, H. Flandorfer, D. Rudnik, B. Mikulowski*
STUDY OF WETTING PROPERTIES, INTERFACE STRUCTURE AND SHEAR STRENGTH OF Sn-Ag-In/Cu AND Sn-Ag-Bi/Cu COUPLES

20.00 **Reception given by the Mayor of Vienna in the City Hall**

Wednesday, September 20, 2006

Morning Session Chair: T. Marhus / S. Kobayashi

Plenary Lecture

09.00 – 09.40 PL5 A. Nakamura, H. Otobe, N. Masaki, H. Yukio, M. Takeda
THE DEFECT-FLOURITE OXIDES $\text{Ln}_y\text{M}_{1-y}\text{O}_{2-y/2}$ (Ln=LANTHANIDE,
M=Hf, Zr, Ce, Th, U)

Communications

09.40 – 10.00 O27 M. Stan, J.C. Ramirez, P. Cristea
THERMODYNAMICS OF NUCLEAR FUEL MATERIALS

10.00 – 10.20 O28 O. Benes, J.P.M. van der Meer, R.J.M. Konings
THERMODYNAMIC STUDY OF $\text{LiF-BeF}_2\text{-ZrF}_4\text{-UF}_4$ SYSTEM

10.20 – 10.50 **Coffee Break**

10.50 – 11.10 O29 M. Schrader, J. Shi, D.E. Mack, K.D. Becker
SPECTROSCOPIC HIGH-TEMPERATURE STUDIES OF COMPLEX
OXIDES

11.10 – 11.30 O30 A. Donchev, E. Richter, M. Schütze, R. Yankov
IMPROVING THE OXIDATION RESISTANCE OF TIAL ALLOYS
WITH FLOURINE

11.30 – 11.50 O31 J.-M. Hur, I.-K. Choi, S.-H. Cho, S.-M. Jeong, C.-S. Seo
PREPARATION AND MELTING OF U FROM U_3O_8

11.50 – 12.10 O32 D.N. Kagan, G.A. Krechetova, E.E. Shpilrain
EXPERIMENTAL INVESTIGATION OF HIGH TEMPERATURE
LIQUID METAL COOLANTS THERMODYNAMIC PROPERTIES BY
A NEW VARIANT OF THE EFFUSION METHOD

12.10 – 13.30 **Lunch**

**Excursion to Burgenland and Conference Dinner in
Esterházy Palace (Eisenstadt)**

23.00 Back in Vienna

Thursday, September 21, 2006

Morning Session Chair: M. Stan / E. Ricci

Plenary Lecture

09.00 – 09.40 PL6 *H. Ipser*

A₃B INTERMETALLICS: DEFECT CHEMISTRY AND
NONSTOICHIOMETRY

Communications

09.40 – 10.00 O33 *G. Frommeyer, R. Rablbauer, R. Fischer*

PROPERTIES OF REFRACTORY NiAl-(Cr, Mo, Re) ALLOYS IN
RELATION TO ATOMIC DEFECTS AND MICROSTRUCTURES

10.00 – 10.20 O34 *F. Stein, D. Grüner, D. Jiang, J. Konrad, G. Kreiner,
A. Ormeci, M. Palm*

STRUCTURES AND HOMOGENEITY RANGES OF OFF-
STOICHIOMETRIC LAVES PHASES IN THE Co-Nb SYSTEM

10.20 – 10.40 O35 *M.H. Braga, J. Ferreira, L.I. Duarte, U.F. Klotz,
L.F. Malheiros*

HIGH TEMPERATURE EXPERIMENTAL RESULTS FOR THE
Al-Fe-Ti SYSTEM

10.40 – 11.10 **Coffee Break**

11.10 – 11.30 O36 *S. Kobayashi, S. Zaeferrer*

DETERMINATION OF PHASE EQUILIBRIA IN THE Fe₃Al-Cr-Mo-C
SEMI-QUATERNARY SYSTEM USING A NEW
DIFFUSION-MULTIPLE TECHNIQUE

11.30 – 11.50 O37 *B. Wilthan, K. Preis, R. Tanzer, W. Schützenhöfer,
G. Pottlacher*

THERMOPHYSICAL PROPERTIES OF THE Ni-BASED ALLOY
NIMONIC 80A UP TO 2400 K

11.50 – 12.10 O38 *N. Krendelsberger, F. Weitzer, J. C. Schuster*

ON THE CONSTITUTION OF Al-Fe-Si BEYOND THE Al-RICH
CORNER

12.10 – 12.30 O39 *Y. Du, N. Krendelsberger, J.C. Schuster, Z-K. Liu*

A THERMODYNAMIC DESCRIPTION OF THE Al-Fe-Si SYSTEM
OVER THE ENTIRE COMPOSITION AND TEMPERATURE RANGES

12.30 – 14.00 **Lunch**

Thursday, September 21, 2006

Afternoon Session: Chair: H. -J. Hoffmann / A. Kroupa

Plenary Lecture

14.00 – 14.40 PL7 *F. Aldinger, M. Zinkevich*
ADVANCED MATERIALS FOR THERMAL BARRIER COATINGS

Communications

14.40 – 15.00 O40 *G. Honstein, C. Chatillon, F. Baillet*
HIGH TEMPERATURE MASS SPECTROMETRIC STUDY OF THE INTERACTIONS IN THE SiC-SiO₂-SYSTEM AND THEIR INFLUENCE ON THE RECRYSTALIZATION PROZESS OF SILICON CARBIDE

15.00 – 15.20 O41 *A. Prokofiev, I. Vasilyeva, I. Smirnov, L. Parfen'eva, A. Shelykh, W. Assmus*
INFLUENCE OF NON-STOICHIOMETRY ON STRUCTURAL, MAGNETIC AND TRANSPORT PROPERTIES OF THE ONE DIMENSIONAL IONIC CONDUCTOR Li_{1-x}Cu_{1+y}VO₄

15.20 – 15.40 O42 *X. Liu, Y. Yang, J. Huang*
SYNTHESIS AND CHARACTERIZATION OF Pr AND Sb DOPED SnO₂ CONDUCTIVE NANOPARTICLES

15.40 – 16.40 **Coffee Break and Poster Session**

16.40 – 17.00 O43 *A. Bol'shakov, K. Gavrichev, N. Danchenko, S. Denisov, A. Prosin, L. Bol'shakova*
OSCILLATION REACTIONS OF GASES CONVERSION OVER BINARY CATALYST AT PRESENCE OF LEAD OXIDES

17.00 – 17.20 IUPAC Poster Awards

17.20 – 18.00 PL8 *SPECIAL LECTURE: M. A. Miodownik*
THE ARTS: WHAT USE TO MATERIALS SCIENCE?

Friday, September 22, 2006

Morning Session: Chair: K. Gavrichev / I. Ohnuma

Plenary Lecture

09.00 – 09.40 PL9 *Z. Tóth*

CHEMISTRY OF MATERIAL SCIENCE PHENOMENA IN HIGH INTENSITY DISCHARGE LIGHT SOURCES

Communications

09.40 – 10.00 O44 *T. Markus, M. Ohnesorge, M. Möllenhoff, K. Hilpert*

INVESTIGATIONS OF THE CHEMICAL INTERACTIONS IN CERAMIC METAL HALIDE LAMPS

10.00 – 10.20 O45 *L.N. Gorokhov, A.M. Emelyanov, E. Osina, J. Slobodenyuk*

VAPOR COMPOSITION AND THERMODYNAMICS OF VAPORAZATION OF SCANDIUM, THULIUM, AND SAMARIUM TRIIODIDES

10.20 – 10.40 O46 *H. Yokokawa, N. Sakai, T. Horita, K. Yamaji, M.E. Brito, H. Kishimoto*

THERMODYNAMIC AND KINETIC CONSIDERATIONS ON DEGRADATIONS IN SOLID OXIDE FUEL CELL CATHODES

10.40 – 11.10

Coffee Break

11.10 – 11.30 O47 *S. Barzilai, M. Aizenshtein, M. Lomberg, N. Froumin, N. Frage*

INTERFACE REACTIONS AND WETTING IN THE CaF₂/Me SYSTEMS

11.30 – 11.50 O48 *J.C. Schuster*

A DTA STUDY OF EQUILIBRATED Al-Ni-Ti ALLOYS

11.50 – 12.10 O49 *K. Grushevskiy, V. Sidorov, V. Bykov, S. Uporov, T. Kulikova, A. Prekul*

STRUCTURAL TRANSFORMATIONS IN Al-Cu-Fe ALLOYS AT HIGH TEMPERATURES

12.10 – 12.30 O50 *K.W. Richter, Y. Prots, Y. Grin*

STRUCTURE AND BONDING IN NEW TERNARY Al-Co-Si COMPOUNDS

12.30 – 12.50 O51 *E. Copland*

PARTIAL THERMODYNAMIC PROPERTIES OF γ' -(Ni,Pt)₃Al, α -NiPt(Al), Pt₃Al & LIQUID ACROSS THE Ni-Al-Pt System

12.50 – 13.00

Closing of HTMC XII

12.40 – 14.00

Lunch

