4th INTERNATIONAL CONFERENCE ON THERMAL PROCESS MODELING AND COMPUTER SIMULATION

31 May – 2 June 2010 Shanghai, CHINA

CONFERENCE PROGRAM & ABSTRACT BOOK
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FORWARD

Welcome to ICTPMCS-2010!

This is the 4th INTERNATIONAL CONFERENCE ON THERMAL PROCESS MODELING AND COMPUTER SIMULATION (ICTPMCS-2010). The conference is for the second time held in Shanghai, China. It is a great honor for Shanghai Jiao Tong University (SJTU) to organize the event again.

Due to increasingly powerful computers and advanced mathematical tools, the materials community finds itself on the verge of another revolution. Scientists and engineers can now guide advanced materials/processes development based on simulation. They are also able to understand how materials behave under changing conditions, and how processes can improve materials performance. Totally 177 papers in oral and poster respectively, including invited 8 plenary and 14 keynote lectures will be presented at the conference. It is believed that these papers have represented the developments in the field of modeling and computer simulation of thermal processes in current status, and will also offer a guideline for all participants.

The participants can have the opportunity for progressive discussing and exchanging the state-of-the-art information and their views in the simulation technology in thermal processes and related materials research field. We would like to gratefully express our appreciation to those who contribute to the success of this conference.

We wish you the stimulating and interesting conference participation as well as enjoyable stay in Shanghai.

May 2010

Co-Chairmen of ICTPMCS-2010
Dr. George E. Totten
Texas A&M University

Prof. Weimin Zhang
Shanghai Jiao Tong University
COMMITTEE MEMBERS

Co-chairmen

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Zuyao Xu, China
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Shipu Chen, Shanghai Jiao Tong University
Liu-Ho Chiu, Tatung University
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Jian Lu, The Hong Kong Polytechnic University
Wei Shi, Tsinghua University

Jiuba Wen, Henan University of Science & Technology
Yixiong Wu, Shanghai Jiao Tong University
Yueming Xu, Chinese Heat Treatment Society
Ning Yu, Shanghai Jiao Tong University
Liwen Zhang, Dalian University of Technology
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E-mail: gujf@sjtu.edu.cn
ictpmcs2010@gmail.com
Secretariat Room: Forest Hotel Building 5-5101

Conference Sponsors

International Federation for Heat Treatment and Surface Engineering

Shanghai Jiao Tong University

Chinese Heat Treatment Society

GENERAL INFORMATION

Period
31 May – 02 June 2010

Venue
Shanghai Sheshan Forest Hotel
Songjiang, Shanghai 201602
Tel.: +86-21-57651160
Fax: +86-21-57651169
http://www.sh-foresthotel.com/

Language
English

Conference Website
http://www.ictpmcs2010.sjtu.edu.cn/
SOCIAL EVENTS

Reception Buffet, 30 May (Sunday) 2010 18:30 – 20:30, Sunshine Dining Hall, Sheshan Forest Hotel
Visiting World EXPO 2010, 02 June (Wednesday) 2010, Shanghai
Banquet, 01 June (Tuesday) 2010 18:30 – 20:30, Sunshine Dining Hall, Sheshan Forest Hotel

ACCOMMODATION

- Sheshan Forest Hotel (Venue)
  Address: 9289 Waiqingsong Road, Songjiang District, Shanghai, P.C.201602
  Tel: +86-21-5765160
  Service: Breakfast, Free Wireless Internet Access in Room

- Lansun Mountain Villa (5 minutes walk to the venue)
  Address: 9269 Waiqingsong Road, Songjiang District, Shanghai, P.C.201602
  Tel: +86-21-57651170
  Service: Breakfast, Internet Access by Cable in Room

GUIDELINE FOR PRESENTATIONS

ORAL SESSION PRESENTATION

Except the invited plenary and keynote speakers, 15 min talk + 5 min discussion per each

- The session-chairs are requested to meet speakers of their sessions in the allotted session rooms at least 15 minutes prior to the commencement of the session. If the session chair(s) cannot chair the allotted session, please contact the Conference Secretariat one day prior to the session.
- The oral-presenting authors should show up at the allotted session room 15 minutes earlier before the session starts. Pre-view and copying of the oral presentation documents can be made in the related session room in advance. The individual session program for the current day will be shown at the entrance of each session room and the Notice Board, if any modification is being made.
- Multi-media projector is available for oral presentation.

POSTER SESSION PRESENTATION

- Poster presenting authors are requested to carefully prepare their posters fit into maximum dimensions 120 cm (height) and 100 cm (width), the paper ID number should be obviously showed at the top left corner of the poster. Simply enlarged abstract or manuscript of the paper is not suitable to appear!
- The authors should stick the poster on the board after plenary session on 31 May by using nails and/or tape provided by the conference at the site. The authors should show up during the poster session period and remove his/her poster after the presentation ends.
PUBLICATION OF SUBMITTED PAPERS

Each registered participant allows submitting max one paper only for presentation at the conference and later for publication. The maximum pages would be 4 pages A4 for contributed papers and 6 pages for invited papers. Please prepare your final manuscripts according to the proceedings paper instructions (see 2nd Circular). And please submit the final full-length text of the manuscript to the Secretariat of ICTPMCS via Email directly by 30 April 2010. All submitted papers have the chance to be, respectively, recruited and published in one of the following journals:
- Materials Science and Technology (SCI)
- International Heat Treatment and Surface Engineering (IFHTSE official journal, EI)
- Journal of Shanghai Jiao Tong University (EI)

after strict quality control by peer review organized by a special panel but the relevant journal's editors keep the right of final decision on acceptance.

The authors of accepted papers have to pay the publication fee afterwards. The amount of the payment depends on the regulation of the journal who accepts to publishing.
## CONFERENCE PROGRAM

<table>
<thead>
<tr>
<th>30 May (SUN)</th>
<th>09:00 – 22:00</th>
<th>Registering at lobby of Forest Hotel</th>
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<tr>
<th>31 May (MON)</th>
<th>08:00 – 08:40</th>
<th>Opening Ceremony at Ballroom</th>
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<tr>
<td></td>
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<td>10:20 – 12:05</td>
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<td>13:00 – 14:45</td>
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<td>D(a)</td>
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<td>18:30 – 21:30</td>
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<th>01 June (TUE)</th>
<th>08:00 - 10:00</th>
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<td>D(d)</td>
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ICTPMCS-2010 Secretariat at Building 5-5101

### TOPICS OF SESSION

- **A** – Plenary Session
- **B** – Phase transformation & Alloy design
- **C** – Heat treatment
- **D** – Deformation & Recrystallization
- **E** – Residual stress & Distortion
- **F** – Melting & Casting
- **G** – Welding & Coating
- **H** – Miscellaneous
MAP OF MEETING ROOMS

会场分布图（2F）

Room No.5
Room No.4
Ball Room
Room No.3
Room No.2
VIP Room
出口（上下电梯）

会场分布图（3F）

Room No.1
多功用车（Multi-Purpose Hall）

Sunshine Dining Hall

出口（上电梯）
出口（下电梯）
出口（左）
出口（右）
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<th>Date &amp; Time</th>
<th>Ballroom</th>
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<td><strong>31 MAY (MON)</strong></td>
<td><strong>OPENING CEREMONY &amp; PLENARY SESSIONS</strong></td>
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| 08:00 - 08:40 | Opening Ceremony  Chair: **Prof. Weimin ZHANG**  
Prof. Wenjun ZHANG (SJTU President)  
Dr George E Totten (Conference Chair)  
Dr Robert B Wood (IFHTSE Secretary General) |
| 08:40 - 09:50 | Plenary Session A(a)  Chair: **Prof. Evan MA**  
A1 **George E Totten**  Process modeling for heat treatment: Current status and future developments  
A2 **T Inoue**  A Mechanism of transformation plasticity and the identification of the characteristics |
| 09:50 - 10:20 | Coffee Break |
| 10:20 - 12:05 | Plenary Session A(b)  Chair: **Prof. T Inoue**  
A4 **Jianguo LIN**  Hybrid forming processes for the production of lightweight high-strength automotive panel parts  
A7 **Jian LU**  Integrated design of product and component realized by thermal processes with pre-stressed engineering approach  
A5 **S Denis**  Prediction of heat treatment residual stresses and distortions: Recent developments |
| 12:05 - 13:00 | Lunch |
| 13:00 - 14:45 | Plenary Session A(c)  Chair: **Prof. Jian LU**  
A6 **Baicheng LIU**  Modeling and simulation on deformation of heavy hydro turbine castings during casting and heat treatment processes  
A3 **Jiansheng PAN**  Green heat treatment – the sustainable way of industrial developments  
A8 **Evan MA**  Modeling amorphous structures produced by melt quenching: Zr-Cu-Al bulk metallic glass versus Ge-Sb-Te chalcogenide phase-change glass |
<p>| 14:45 - 15:15 | Coffee Break |</p>
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<td>B03 Zuo YU</td>
<td>B10 Gangbo TANG</td>
<td>D11 Jun DING</td>
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<td>17:00 - 18:00</td>
<td>B16 Xiangru LIU</td>
<td>D15 Ben ZENG</td>
<td>D17 Lin CHEN</td>
<td>D27 Shu GUO</td>
<td>E11 Yifan YANG</td>
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<td>c19 Xiangping LI</td>
<td>c21 Xunwei ZHO</td>
<td>f11 Yifan YANG</td>
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<tr>
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<td>08:00 - 10:00</td>
<td>Session B(b) Chairs: <strong>Profs. Baicheng LIU &amp; Bo WU</strong></td>
<td>Session C(b) Chairs: <strong>Profs. S Denis &amp; M Reich</strong></td>
<td>Session D(b) Chairs: <strong>Profs. B Rivolta &amp; Yanlin HE</strong></td>
<td>Session E(b) Chairs: <strong>Profs. M NARAZAKI &amp; Ning YU</strong></td>
<td>Session G(b) Chairs: <strong>Profs. M Rachik &amp; Wenya LI</strong></td>
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<td>B32 Yao SHEN</td>
<td>B20 Jer-Ren YANG</td>
<td>D41 Fuxing YIN</td>
<td>E16 M Narazaki</td>
<td>G01 Jianglin HUANG</td>
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<td>B25 Xueshao QIU</td>
<td>C03 M Reich</td>
<td>D14 Yongcheng LIN</td>
<td>E07 J Ahlstrom</td>
<td>G03 Huajun ZHANG</td>
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<td>B24 Wei YOU</td>
<td>C08 Dongmei ZHU</td>
<td>D09 Yanlin HE</td>
<td>E08 F Frerichs</td>
<td>G05 Liang CHEN</td>
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<td>B06 Weimin GAO</td>
<td>C02 K Babu</td>
<td>D12 Xudong ZHOU</td>
<td>E10 MV LI</td>
<td>G20 R Shateri</td>
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<td>B17 Likun ZHANG</td>
<td>C07 D Landek</td>
<td>D40 Ganlin XIE</td>
<td>E13 Guanjie YUAN</td>
<td>G02 Ali Slimani</td>
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<td>C05 Guoyong LIU</td>
<td>D23 Jixiang ZHANG</td>
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<td>D35 Huagui HUANG</td>
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<td>10:00 - 10:30</td>
<td><strong>Coffee Break</strong></td>
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<td>01 JUNE (TUE)</td>
<td>PARALLEL SESSIONS - 3</td>
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<td>10:30 - 12:00</td>
<td>Session B(c) Chairs: <strong>Profs. Zhaohui JIN &amp; Ping ZHANG</strong></td>
<td>Session C(c) Chairs: <strong>Profs. Jer-Ren YANG &amp; BL Ferguson</strong></td>
<td>Session D(c) Chairs: <strong>Profs. Liwen ZHANG &amp; Jixiang ZHANG</strong></td>
<td>Session E(c) Chairs: <strong>Profs. Young-Kook LEE &amp; T UEHARA</strong></td>
<td>Session G(c) Chairs: <strong>Profs. Hsin-Chih LIN &amp; Wenliang WANG</strong></td>
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<td>B21 Xuejun JIN</td>
<td>E05 S MacKenzie</td>
<td>B02 B Rivolta</td>
<td>E15 Liu-Ho CHIU</td>
<td>G10 Lin MA</td>
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<td>B08 Rongda ZHAO</td>
<td>C11 Xiaodong HU</td>
<td>D08 Weiming ZENG</td>
<td>E11 V Shchukin</td>
<td>G12 Dejun KONG</td>
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<td>B15 Zhenhuan ZHENG</td>
<td>H04 Min FENG</td>
<td>D37 Xiao ZHAO</td>
<td>E12 T Uehara</td>
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<td>B19 Tuo CHEN</td>
<td>C13 MK Torbati</td>
<td>D38 Minjie LAI</td>
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<td>G19 Yi-Shiun DING</td>
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<td>12:00 - 13:00</td>
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<td><strong>13:00 - 15:00</strong></td>
<td>Session B(d) Chairs: Prof. Yao SHEN &amp; Yaogen SHEN</td>
<td>Session C(d) Chairs: Prof. Wei SHI &amp; L Petrova</td>
<td>Session D(d) Chairs: Prof. Dongyin JU &amp; Huaguai HUANG</td>
<td>Session F(a) Chairs: Prof. P Gardin &amp; Yitao YANG</td>
<td>Session F(b) Chairs: Prof. NK Prabhu &amp; Fuxing YIN</td>
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<td>B31 Jihua ZHANG</td>
<td>C06 Wei SHI</td>
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<td>F09 Shuang-Shii LIAN</td>
<td>B04 Jianzheng GUO</td>
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<td>B23 Maohua LIN</td>
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<td>F02 Lijia HE</td>
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<td>B14 Yongqiang LONG</td>
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<td>F01 NK Prabhu</td>
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<td>B22 Chaohui ZHANG</td>
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<td><strong>15:00 - 15:30</strong></td>
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<td>D18 Lin CHEN</td>
<td>H28 Zhibin SUN</td>
<td>F08 Guiyong WU</td>
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<td><strong>18:00 - 20:00</strong></td>
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OPENING CEREMONY & PLENARY SESSIONS

31 May 2010 (Monday)  Ballroom

Opening Ceremony  8:00 – 8:40
Chair: Prof. Weimin ZHANG
Prof. Wenjun ZHANG (SJTU President)
Dr. George E Totten (Conference Chair)
Dr. Robert B Wood (IFHTSE Secretary-General)

Session A(a)  08:40 – 09:50
Chair: Prof. Evan MA

08:40 – 09:15  A1  George E Totten (Texas A&M University, USA)
Process modeling for heat treatment: Current status and future developments

09:15 – 09:50  A2  T Inoue (Fukuyama University, Japan)
A mechanism of transformation plasticity and the identification of the characteristics

09:50 - 10:20 Coffee break

Session A(b)  10:20 – 12:05
Chair: Prof. T Inoue

10:20 – 10:55  A4  Jianguo LIN (Imperial College London, UK)
Hybrid forming processes for the production of lightweight high-strength automotive panel parts

10:55 – 11:30  A7  Jian LU (The Hong Kong Polytechnic University, HK)
Integrated design of product and component realized by thermal processes with pre-stressed engineering approach

11:30 – 12:05  A5  S Denis (LSG2M-UMR CNRS/INPL/UHP, France)
Prediction of heat treatment residual stresses and distortions: Recent developments

12:05 - 13:00 Lunch

Session A(c)  13:00 – 14:45
Chair: Prof. Jian LU

13:00 – 13:35  A6  Baicheng LIU (Tsinghua University, China)
Modeling and simulation on deformation of heavy hydro turbine casting and heat treatment processes
13:35 – 14:10  **A3**  Jiansheng PAN  *(Shanghai Jiao Tong University, China)*  
Green heat treatment – the sustainable way of industrial developments

14:10 – 14:45  **A8**  Evan MA  *(Johns Hopkins University, USA)*  
Modeling amorphous structures produced by melt quenching: Zr-Cu-Al bulk metallic glass versus Ge-Sb-Te chalcogenide phase-change glass

14:45 - 15:15 Coffee break

**PARALLEL SESSIONS - 1**

31 May 2010 (Monday)  15:15 – 17:00

**Session B(a) Meeting room No. 1**  
**Chairs:** Profs. Xuejun JIN & Huiping LI

15:15 – 15:40  **B13**  - Keynote  Bo WU  *(Fuzhou University, China)*  
A general approach on the order-disorder transition of complex intermetallics by combining thermodynamic model with first-principles calculations

15:40 – 16:00  **B12**  Chaoyang SUN  *(University of Science and Technology Beijing, China)*  
Experimental study of bainite transformation plasticity during continuous cooling for Armour steel

16:00 – 16:20  **B03**  Zhuo YU  *(Leibniz University Hannover, Germany)*  
Computation of the Isothermal Transformation Diagrams of 42CrMo4 Steel from the Dilatometer Measurements with Continuous Cooling

16:20 – 16:40  **B10**  Gangbo TANG  *(Central Iron and Steel Research Institute, China)*  
Calculation on the incubation period of proeutectoid ferrite transformation for Si-Mn trip steel

16:40 – 17:00  **D11**  Jun DING  *(Shanghai Jiao Tong University, China)*  
String-like atomic motion in metallic glass under deformation

**Session C(a) Meeting room No. 4**  
**Chairs:** Profs. S MacKenzie & D Landek

15:15 – 15:40  **E04**  - Keynote  BL Ferguson  *(Deformation Control Technology, Inc., USA)*  
Using simulation for heat treat process design: Matching the quenching process with steel grade and product geometry

15:40 – 16:00  **C09**  Zhichao LI  *(Deformation Control Technology, Inc., USA)*  
Computer modeling and validations of steel gear heat treatment processes using commercial software DANTE®

16:00 – 16:20  **C10**  K Cvetkovski  *(Chalmers University of Technology, Sweden)*  
Short-time tempering kinetics of quench hardened pearlitic steels
16:20 – 16:40  **C01**  Weimin GAO (*Deakin University, Australia*)
Integrated fluid-thermal-structure numerical analysis for the quenching of metallic components

16:40 – 17:00  **C14**  Tao CONG (*Harbin Institute of Technology, China*)
First principles characterization of phase Ti$_2$AlN prepared by plasma nitriding of Ti$_3$Al alloy

**Session D(a) Meeting room No. 3**
**Chairs:** Profs. Jianguo LIN & A Gontarz

15:15 – 15:35  **D01**  A Gontarz (*Lublin University of Technology, Poland*)
Numerical analysis of unconventional forging process of hollowed shaft from Ti-6Al-4V alloy

15:35 – 15:55  **D02**  Z Pater (*Lublin University of Technology, Poland*)
The analysis of the cross-wedge rolling process of toothed shafts made from 2618 aluminium alloy

15:55 – 16:15  **D03**  Haibo XIE (*University of Wollongong, Australia*)
FEM temperature simulation of accelerated cooling on Run-out Table during hot rolling

16:15 – 16:35  **D04**  Xiawei YANG (*Harbin Institute of Technology, China*)
Fractal studies on primary phase morphology of the TA15 titanium alloy after hot compressive deformation

16:35 – 16:55  **D07**  Jixiang ZHANG (*Chongqing Jiaotong University, China*)
Research of Al-Mg-Si alloy hot-rolled multi-stage recrystallization by experiment and simulation

**Session E(a) Meeting room No. 2**
**Chairs:** Profs. Liu-Ho CHIU & T Luebben

15:15 – 15:40  **E01**  - Keynote  Young-Kook LEE (*Yonsei University, Korea*)
Computer simulation of microstructure and distortion during quenching and tempering process of medium carbon steel

15:40 – 16:00  **E06**  S MacKenzie (*Houghton International, Inc., USA*)
Effect of alloy on the distortion of oil quenched automotive pinion gears

16:00 – 16:20  **E09**  Dae-Hoon KO (*Pusan National University, Korea*)
Prediction and measurement of residual stress for 6061 aluminum alloy during T6 heat treatment

16:20 – 16:40  **E02**  T Luebben (*Foundation Institute of Materials Science (IWT), Germany*)
Dimensional analysis of distortion during through hardening of cylindrical steel workpieces

16:40 – 17:00  **E03**  J Rath (*Foundation Institute of Materials Science (IWT), Germany*)
Generation of compressive residual stresses by high-speed water quenching
Session G(a)  Meeting room No. 5  
Chairs: Profs. Hao LU & Bolin HE

15:15 – 15:40  G13 - Keynote  Hsin-Chih LIN (National Taiwan University, Taiwan)  
The Surface Coatings of Super-Light Magnesium-Lithium Alloys

15:40 – 16:00  G06  Yongcheng LIN (Central South University, China)  
Finite element model for the bonding process of anisotropic conductive films joints

16:00 – 16:20  G07  Jihong YANG (Swinburne University of Technology, Australia)  
3D transient thermal modelling of the temperature profile during laser assisted machining of Ti6Al4V alloy

16:20 – 16:40  G11  Changwen CUI (Fuzhou University, China)  
Three-dimensional numerical simulation of splat formation on substrates with different conditions in plasma spraying

16:40 – 17:00  G09  Zhenhai XU (Harbin Institute of Technology, China)  
Deposition conditions effect on TiN film growth by molecular dynamics simulations

17:00 – 18:00 Supper

PARALLEL SESSIONS - 2

01 June 2010 (Tuesday)  08:00 – 10:00

Session B(b) Meeting room No. 1  
Chairs: Profs. Baicheng LIU & Bo WU

08:00 – 08:20  B32  Yao SHEN (Shanghai Jiao Tong University, China)  
The effects of coherency stress on interdiffusion across coherent multilayer interfaces

08:20 – 08:40  B25  Xueshao QIU (Zhengzhou University of Light Industry, China)  
The reconstruction of the temperature field base on Matlab and two-dimensional interpolation

08:40 – 09:00  B24  Wei YOU (North China Institute of Science and Technology, China)  
Predicting the CCT Diagrams of Steels Using Artificial Neural Network Models

09:00 – 09:20  B06  Weimin GAO (Deakin University, Australia)  
Modelling hydrogen diffusion and phase transformation for titanium powder hydrogenization-dehydrogenization (HDH) rolling process

09:20 – 09:40  B17  Likun ZHANG (Fuzhou University, China)  
Prediction of the site occupancy of alloying elements in REFe12-xMx-based alloy with ThMn12 prototype by combining thermodynamic model with first-principles calculations
Session C(b)  Meeting room No. 4  

Chairs: Prof. S Denis & M Reich

08:00 – 08:25  B20 - Keynote  Jer-Ren YANG (National Taiwan University)  
The heat treatment of superbaintic ferrite

08:25 – 08:45  C03  M Reich (University of Rostock, Germany)  
Mechanical properties of undercooled aluminium alloys and their implementation in quenching simulation

08:45 – 09:05  C08  Dongmei ZHU (University of Science and Technology Beijing, China)  
Numerical simulation research on heat transfer of air mist spray cooling

09:05 – 09:25  C02  K Babu (Indian Institute of Technology Madras, India)  
Finite element modeling of quenching heat treatment of AISI 4140 steel with phase transformation

09:25 – 09:45  C07  D Landek (University of Zagreb, Croatia)  
Prediction of properties of gas-quenched work pieces based on the modified hardenability test

09:45 – 10:05  C05  Guoyong LIU (University of Science and Technology Beijing, China)  
Influencing factors on cooling uniformity of large caliber seamless pipe for quenching

Session D(b)  Meeting room No. 3

Chairs: Profs. B Rivolta & Yanlin HE

08:00 – 08:25  D41- Keynote  Fuxing YIN (National Institute for Materials Science, Japan)  
Hot-rolling bonded multilayered composite steels and the varied tensile deformation behavior

08:25 – 08:45  D14  Yongcheng LIN (Central South University, China)  
Numerical simulation for effects of friction on quality of low alloy steel forgings

08:45 – 09:05  D09  Yanlin HE (Shanghai University, China)  
Influence of soaking temperature on microstructure of multi-pass compression deformation for low carbon steels

09:05 – 09:25  D12  Xudong ZHOU (Henan University of Science and Technology, China)  
The forging penetration efficiency of steel H13 stepped shaft radial forging with GFM forging machine

09:25 – 09:45  D40  Ganlin XIE (University of Science and Technology Beijing, China)  
Microstructural modeling of dynamic recrystallization in Nb microalloyed steels

09:45 – 10:05  D23  Jixiang ZHANG (Chongqing Jiaotong University, China)  
A novel Monte Carlo Potts Model in metal recrystallization simulation
Session E(b)  Meeting room No. 2
Chairs: Profs. M Narazaki & Ning YU

08:00 – 08:25  E16  - Keynote  M Narazaki (Utsunomiya University, Japan)
Simulation of asymmetrical quench distortion of long thin steel parts

08:25 – 08:45  E07  J Ahlström (Chalmers University of Technology, Sweden)
Modelling of distortion during cooling and machining of aluminium engine blocks with cast-in cast iron liners

08:45 – 09:05  E08  F Frerichs (Stiftung Institut für Werkstofftechnik, Germany)
Effects of Inhomogeneous Distributions of Distortion Potential on Out of Roundness of Rings

09:05 – 09:25  E10  MV LI (Portland State University, USA)
Microstructure evolution and residual stresses in coke drum repair welds

09:25 – 09:45  E13  Guanjie YUAN (University of Science and Technology Beijing, China)
Finite element modeling of hydrostatic stresses distribution in copper dual-damascene interconnects

Session G(b)  Meeting room No. 5
Chairs: Profs. M Rachik & Wenya LI

08:00 – 08:20  G01  Jianglin HUANG (University of Birmingham, UK)
Modelling of hydrogen effect on porosity formation in electron beam welded titanium-based alloys

08:20 – 08:40  G03  Huajun ZHANG (Harbin University of Science and Technology, China)
Stress and distortion of simultaneous control by two-sided arc welding for thick plate of high strength steel

08:40 – 09:00  G05  Liang CHEN (Northwestern Polytechnical University, China)
Effects of processing parameters on the temperature field and axial shortening of inertia friction welded GH4169 joints by numerical simulation

09:00 – 09:20  G20  R Shateri (Islamic Azad university, Iran)
Effect of solution annealing in post and preheat conditions on microstructure and mechanical properties of IN-718 weld metal

09:20 – 09:40  G02  Ali Slimani (Compiegne University of Technology, France)
High temperature indentation test to improve constitutive model for welding simulation

09:40 – 10:00  D35  Huagui HUANG (Yanshan University, China)
Research on pores deformation welding condition for manufacturing of heavy forings

10:00 – 10:30 Coffee Break
PARALLEL SESSIONS - 3

01 June 2010 (Tuesday)  10:00 – 12:00

Session B(c)  Meeting room No. 1
Chairs: Profs. Zhaohui JIN & Ping ZHANG

10:30 – 10:55  B21 - Keynote  Xuejun JIN (Shanghai Jiao Tong University, China)
Microstructure design and implementation of new generation high
strength multi-phase steels

10:55 – 11:15  B08  Rongda ZHAO (Harbin Institute of Technology Harbin, China)
The formation of nanometer coherent structures during spinodal
decomposition and ordering coexistence phase transformation in Fe-24Al alloys

11:15 – 11:35  B15  Zhenhuan ZHENG (Fuzhou University, China)
Prediction of the site occupancies of alloying elements in D019-type
Ti3Al-based alloy by combining thermodynamic model with ab initio Calculations

11:35 – 11:55  B19  Tuo CHEN (Fuzhou University, China)
Prediction of the ordering behaviors of alloying elements Ta, V, Mo and
Hf in Ti2AlNb-based orthorhombic alloy by combining thermodynamic
model with ab initio calculations

Session C(c)  Meeting room No. 4
Chairs: Profs. Jer-Ren YANG & BL Ferguson

Comparison between High Pressure Hydrogen Quenching and Oil
Quenching of Steel Parts Considering Load Effect (Present in “C”)

10:55 – 11:20  C11 - Keynote  Xiaodong HU (Saitama Institute of Technology, Japan)
The Developments and application of computer simulation code on
Induction heat treatment process

11:20 – 11:40  H04  Min FENG (Dalian Maritime University, China)
Phase diagram simulation and heat-treatment of a Ni-based alloy for
high-temperature vitriol pump

11:40 – 12:00  C13  MK Torbati (Ferdowsi University of Mashhad, Iran)
Thermodynamic analytical modeling of gas reactions to investigate the
effect of environmental temperature and humidity on carbon potential
in gas carburizing process

Session D(c)  Meeting room No. 3
Chairs: Profs. Liwen ZHANG & Jixiang ZHANG

10:30 – 10:55  B02 - Keynote  B Rivolta (Politecnico di Milano, Italy)
Recrystallization kinetics of austenite in Nb microalloyed steel

10:55 – 11:15  D08  Weiming ZENG (Shanghai University, China)
Recrystallization behavior of a Ti-microalloyed complex phase steel during hot compression

11:15 – 11:35 D37 Xiao ZHAO (Northwestern Polytechnical University, China)
Numerical analysis of the effect of material properties on the deformability of near hemispherical shell

11:35 – 11:55 D38 Minjie LAI (Northwestern Polytechnical University, China)
First-principles prediction of ductility in β-type Ti-Mo binary alloys

Session E(c) Meeting room No. 2
Chairs: Profs. Young-Kook LEE & T Uehara

10:30 – 10:50 E15 Liu-Ho CHIU (Tatung University, Tanwan)
Distortion measurement of martensitic stainless mold steels by vacuum heat treatment

10:50 – 11:10 E11 V Shchukin (Khristianovich Institute of Theoretical and Applied Mechanics, Russia)
Numerical modeling of the stress-and-strain state of the surface layer of steel at high-frequency pulse treating

11:10 – 11:30 E12 T Uehara (Yamagata University, Japan)
Computer simulation of microscopic stress distribution in complex microstructure using a phase field model

Session G(c) Meeting room No. 5
Chairs: Profs. Hsin-Chih LIN & Wenliang WANG

10:30 – 10:50 G10 Lin MA (Academy of Armored Force Engineering, China)
The analysis of stress and strain field of the laser cladding process on the ring circular orbit

10:50 – 11:10 G12 Dejun KONG (Jiangsu Polytechnic University, China)
Structures and properties of VC coating on Cr12MoV cold working die surface steel by TD process

11:10 – 11:30 B05 Yaogen SHEN (City University of Hong Kong, HK)
Size-dependent lognormal grain size distribution in nanocomposite films

11:30 – 11:50 G19 Yi-Shiun DING (National Taiwan Ocean University, Taiwan)
Notched tensile fracture of Ti-15V-3Cr-3Sn-3Al Alloy welds

12:00 - 13:00 Lunch
PARALLEL SESSIONS - 4

01 June 2010 (Tuesday)  13:00 – 15:00

Session B(d)  Meeting room No. 1
Chairs: Profs. Yao SHEN & Yaogen SHEN

13:00 – 13:25  B31 - Keynote  Jihua ZHANG (Shanghai Jiao Tong University, China)
Microstructural evolution of two way hysteresis-free shape memory effect in Mn-based antiferromagnetic alloys

13:25 – 13:45  B23  Maohua LIN (Fuzhou University, China)
Design of magnetic high entropy alloy with FCC structure by combining thermodynamic model with first-principles calculations

13:45 – 14:05  B14  Yongqiang LONG (Henan University of Science and Technology, China)
First-principles investigation of the structural stability and electronic property of precipitates on the Cu-rich side of Cu-Ni-Si alloys

14:05 – 14:25  B22  Chaohui ZHANG (Fuzhou University, China)
Design of high entropy alloy with FCC structure by combining thermodynamic model with first-principles calculations

14:25 – 14:45  B18  Guoxin YE (Fuzhou University, China)
Prediction of the site occupancy of alloying elements in Ni3Al-based L12 alloy by combining thermodynamic model with first-principles Calculations

Session C(d)  Meeting room No. 4
Chairs: Profs. Wei SHI & L Petrova

13:00 – 13:25  C06 - Keynote  Wei SHI (Tsinghua University, China)
Modeling of transformation plasticity during quenching processes of large steel forgings and experimental validation

13:25 – 13:45  C16  L Petrova (Moscow State Automobile and Road Construction State Technical University, Russia Federation)
Modeling of processes of thermo-chemical treatment: Traditions of Russian Scientific School

13:45 – 14:05  H09  Tei-Chen CHEN (National Cheng Kung University, Taiwan)
Nanoscale mechanical behaviors of nanostructured silicon

14:05 – 14:25  C18  Jian XU (University of Science and Technology Beijing, China)
Numerical simulation for thermal process upon reducing gas composition of pre-reduction shaft furnace

14:25 – 14:45  C20  N Svetushkov (Moscow State Automobile and Road Institute, Russia)
Geometric integral methods in simulation of thermal processes
Session D(d) Meeting room No. 3
Chairs: Profs. Dongying JU & Huagui HUANG

13:00 – 13:25  D16 - Keynote  Liwen ZHANG (Dalian University of Technology, China)
3D Finite Element Simulation of Rod and Wire Continuous Rolling

13:25 – 13:45  D25  Yanshu ZHANG (Advanced Manufacture Technology Center, China Academy of Machinery Science & Technology, China)
The Microstructure prediction of magnesium alloy AZ31D during hot extrusion

13:45 – 14:05  D26  Yuewen ZHAI (Beijing Research Institute of Mechanical & Electrical Technology, China)
The application of numerical simulation technology to the forming process of large scale tee

14:05 – 14:25  D06  Jisen QIAO (State Key Laboratory of Gansu Advanced Non-ferrous Metal Materials, China)
Study on temperature evolution and metal flow of 6005A aluminum alloy during indirect hot extrusion

14:25 – 14:45  D22  Lu LU (Tianjin Polytechnic University, China)
Simulation of the tube forming process in Mannesmann mill

14:45 – 15:05  D05  Tingfang ZHANG (Nanchang University, China)
Simulation experiment on friction coefficients during warm deep drawing of magnesium alloy sheet

Session F(a) Meeting room No. 2
Chairs: Profs. P Gardin & Yitao YANG

13:00 – 13:20  F09  Shuang-Shii LIAN (National Taiwan University, Taiwan)
Simulation study of the effects of parameters of graphite susceptor for induction metling process of polycrystalline silicon

13:20 – 13:40  F13  Xiaohua ZHAO (Northwestern Polytechnical University, China)
Numerical simulation of fluid flow caused by buoyancy forces during VAR process

13:40 – 14:00  B01  P Gardin (Arcelor Mittal Global R&D, France)
Mathematical modeling: an efficient way to predict inclusion evolution in liquid steel

14:00 – 14:20  F04  Shikun XIE (Jinggangshan University, China)
Remelting technology and microstructural evolution of semi-solid Al-7Si-2RE alloy

14:20 – 14:40  F12  Liang HE (Worcester Polytechnic Institute, USA)
Modeling on Directional Solidification of Solar Cell Grade Multicrystalline Silicon Ingot Casting
Session F(b)  Meeting room No. 5
Chairs: Profs. NK Prabhu & Fuxing YIN

13:00 – 13:20  B04  Jianzheng GUO (ESI US R&D, USA)
Prediction of microstructure and mechanical properties in aluminum castings after heat treatment

13:20 – 13:40  F02  Lijia HE (Liaoning University of Technology, China)
Modification analysis of hypereutectic Al-Si alloy with P or phosphide by EET

13:40 – 14:00  F01  NK Prabhu (National Institute of Technology Karnataka, India)
Measurement of heat transfer coefficients during downward solidification of commercially pure Zn and ZA8 alloy

14:00 – 14:20  F06  Rongzhen XIAO (Lanzhou University of Technology, China)
Phase-field modeling of free dendritic growth in a binary alloy under a forced flow

14:20 – 14:40  F05  Li WANG (Tsinghua University, China)
Numerical simulation of macrosegregation during steel ingot solidification using continuum model

15:00 – 15:30 Coffee break

PARALLEL SESSIONS - 5

01 June 2010 (Tuesday)  15:30 – 17:30

Session H(a)  Meeting room No. 1
Chairs: Profs. Tei-Chen CHEN & I Petrc

15:30 – 15:50  H07  Yu ZHANG (University of Science and Technology Beijing, China)
Development and application of thermal mathematical model of iron ore pellet bed in grate

15:50 – 16:10  H10  Mei ZHANG (Shanghai University, China)
High temperature mechanical properties of a Ti-microalloyed complex phase steel

16:10 – 16:30  H11  Ying BA (Harbin Institute of Technology, China)
Thermo-elasto-plastic damage analysis of functionally graded materials under thermal loading

16:30 – 16:50  H12  Yeqiong WU (Harbin Institute of Technology, China)
Properties and electronic structure of iron under pressure up to 30GPa

16:50 – 17:10  H13  Guofei LIU (University of Mining and Technology (Beijing), China)
Numerical simulation of defect inspection using electromagnetic stimulated thermography
17:10 – 17:30
17:30 – 17:50  H20  Lei LU (Inner Mongolia University of Technology, China)
        A symmetry-homotopy hybrid algorithm for solving boundary value problem of partial differential equations

Session H(b)  Meeting room No. 4
Chairs: Profs. Duc Hai Do & Sheng WANG

15:30 – 15:50  H01  B ŠAMEC (University of Maribor, Slovenia)
        Numerical analysis of a railway brake disc
15:50 – 16:10  H02  Grega Oder (University of Maribor, Slovenia)
        Numerical analysis of braking discs for a »Taurus« class locomotive
16:10 – 16:30  H03  Duc Hai Do (Magdeburg University, Germany)
        Mathematical modelling and simulation of lime burning process in a normal shaft kiln
16:30 – 16:50  H05  Haiwei ZHENG (University of Science and Technology Beijing, China)
        Optimization of pellet production process parameters in grate using simulation results
16:50 – 17:10  H06  Zhiyin XIE (University of Science and Technology Beijing, China)
        Optimization of pellet induration process parameters in rotary kiln using simulation results
17:10 -17:30  H19  Zhong ZHENG (Hubei University of Technology, China)
        Effects of conformal cooling channel on injection molding and productivity

Session D(e)  Meeting room No. 3
Chairs: Profs. Lin CHEN & Z Pater

15:30 – 15:50  D13  Zhu SU (Chongqing University, China)
        Thermal-mechanical coupling simulation and springback control in hot forming process of fan blade
15:50 – 16:10  D18  Lin CHEN (Inner Mongolia university of science and technology, China)
        Numerical simulation analysis in cooling temperature field and bending deformation after rolling of 100-meter rail
16:10 – 16:30  D19  Lin CHEN (Inner Mongolia university of science and technology, China)
        Research and Application of Pre-bent automatic control Models of 100 meters rail
16:30 – 16:50  D20  Kun CHEN (Shanghai University, China)
        Simulation of large forging flat-anvils stretching process and its optimization
16:50 – 17:10  **D21**  Dong HE *(Harbin Institute of Technology, China)*  
A study of FCC metal tension behavior by crystal plasticity finite element method

17:10 – 17:30  **D36**  Hua WANG *(Shanghai University, China)*  
FEM study of the tensile behavior of annealed ULC-BH steels

**Session H(c)  Meeting room No. 2**  
**Chairs:** Profs. J Ahlstrom & Junxiao FENG

15:30 – 15:50  **H14**  Guohua LI *(China University of Mining & Technology (Beijing), China)*  
Numerical Simulation of the NDT of Metallic Composites Plate by Infrared Thermography

15:50 – 16:10  **H28**  Zhibin SUN *(University of Science and Technology Beijing, China)*  
Optimization of pellet production process parameters in annular cooler using simulation results

16:10 – 16:30  **H29**  Sheng WANG *(RIKEN, Japan)*  
Performance, flow and thermal characteristics of a viscous micro/nano pump simulated by particle/continuum methods

16:30 – 16:50  **H15**  Wenjun ZHAO *(Harbin Institute of Technology, China)*  
Modeling of recirculation zone around the nozzle used in spray forming

16:50 – 17:10  **H16**  Linghang XING *(Changjiang Scientific Research Institute, China)*  
Modified QUICK schemes for 3D advection-diffusion equation of pollutants on unstructured grids

17:30 – 17:50  **H18**  Yanzhe LI *(Lanzhou Jiao Tong University, China)*  
Modeling and simulation for electromagnetic shielding performance of magnesium

**Session F(c)  Meeting room No. 5**  
**Chairs:** Profs. Shuang-Shii LIAN & Jianfeng GU

15:30 – 15:50  **F14**  Enyu GUO *(Tsinghua University, China)*  
Modeling and simulation of solidification and temperature of thick-wall stainless steel pipe in horizontal centrifugal casting process

15:50 – 16:10  **F08**  Guiyong WU *(Dalian University of Technology, China)*  
Numerical simulation of structure and shrinkage in cast-steel ingot

16:10 – 16:30  **F03**  Baiyang LOU *(Zhejiang University of Technology, China)*  
Numerical simulation of mold filling and solidification process of a disc aluminum alloy in pressure die casting

16:30 – 16:50

16:50 – 17:10  **F07**  Hongmin GUO *(Nanchang University, China)*  
Micro-scale modeling of soft impingement during rheocasting

18:00 – 20:00 Conference banquet
POSTER SESSIONS

01 June 2010 (Tuesday)  18:30 – 21:30 Meeting room No. 1

B SESSION – Phase transformation & Alloy design

b09  Jing WU (Shanghai University, China)
Study on the initiation and evolution of strengthening phase in niobium micro-alloyed steel by 3DAP

b11  Naqiong ZHU (Shanghai University, China)
Modeling of nucleation and growth of $\text{M}_{23}\text{C}_6$ carbide in multi-component Fe-based alloy

b16  Xiangying MENG (Northeastern University, China)
First-principles calculation of the temperature dependence of hardening precipitation in Mg-Gd alloys

b26  Shikun XIE (Jinggangshan University, China)
Process of Equiaxed Grains of RE-Al Alloy under Slope Vibration

b27  Shanglei YANG (Shanghai University of Engineering Science, China)
Calculation on the solid solution forming enthalpies of Re-Mo-Ti gradient alloy in thermodynamics

b28  Hong DING (Shanghai Jiao Tong University, China)
Monte Carlo study of B2-L2$_1$ ordering transitions in Au-Cu-Al systems

b30  Ping DONG (National Key Laboratory Surface Physics and Chemistry, China)
Numerical simulation of temperature and stress fields in beryllium cutting process

b33  Ning YU (Shanghai Jiao Tong University, China)
Simulating mechanical behaviour of porous materials for SOFC

C SESSION – Heat treatment

c15  H Yahagi (Saitama Institute of Technology, Japan)
Thermal flow simulation and visualization of PAG quenchants in cooling evaluation equipment with twin stir

c19  Huiping LI (Shandong University, China)
Research on the quenching performance of 22MnB5 quenched in the steel die

c21  Xunwei ZUO (Shanghai Jiao Tong University, China)
Timed quenching process for large-scale AISI4140 steel shaft

c22  Yingli ZHAO (Kunming University of Science and Technology, China)
Kinetics of austenite grain growth in medium-carbon Nb-bearing steel

c23  Dongying JU (Saitama Institute of Technology, Japan)
The developments and application of computer simulation code on induction heat treatment process

c24  Ruikai CHEN (Shanghai Jiao Tong University, China)
A novel process to refine the grain size of NiCrMoV steel