

**4th INTERNATIONAL CONFERENCE ON
THERMAL PROCESS MODELING AND
COMPUTER SIMULATION**

31 May – 2 June 2010 Shanghai, CHINA

**CONFERENCE PROGRAM
&
ABSTRACT BOOK**

Contents

Forward	2
Committee Members	3
General Information	5
Social Events	5
Accommodation	5
Guideline for Participants.....	5
Publication of Submitted Papers.....	6
Conference Program	7
Map of Meeting Rooms.....	8
Detailed Program.....	9
Abstract	
Session A.....	29
Session B	33
Session C	51
Session D	63
Session E	85
Session F.....	95
Session G	103
Session H	115
Memo.....	135

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



Dr. George E. Totten
Department of Mechanical
Engineering
Texas A&M University
College Station, TX 77843
USA
Tel.: +1(206)-788-0188
Fax: +1(815)-461-7344
E-mail: GETotten@gmail.com



Prof. Weimin Zhang
School of Materials Science &
Engineering
Shanghai Jiao Tong University
800 Dongchuan Road, Minhang
Shanghai 200240, CHINA
Tel.: +86-21-34203743
Fax: +86-21-54745526
E-mail: wmzhang@sjtu.edu.cn

International Advisory Committee

Lauralice C.F. Canale, Brazil

Rafael Colas, Mexico

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Lynn Ferguson, USA

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Technology

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Liwen Zhang, Dalian University of Technology

Secretariat

c/o **Prof. Jianfeng Gu**

School of Materials Science & Engineering
Shanghai Jiao Tong University
800 Dongchuan Road, Minhang
Shanghai 200240, CHINA
Tel.: +86-21 -34203743
-54745526
Fax: +86-21-54745526

+86-(0)13917629227 (Jianfeng Gu)
+86-(0)13501853651 (Ning Yu)
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-foresthôtel.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) can not 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

30 May (SUN)	09:00 – 22:00	<i>Registering at <u>lobby of Forest Hotel</u></i>				
	Evening	<i>Reception Buffet</i>				
31 May (MON)	08:00 – 08:40	Opening Ceremony at <u>Ballroom</u>				
	08:40 – 09:50	Plenary Session A(a) at <u>Ballroom</u>				
		<i>Coffee Break</i>				
	10:20 – 12:05	Plenary Session A(b) at <u>Ballroom</u>				
		<i>Lunch</i>				
	13:00 – 14:45	Plenary Session A(c) at <u>Ballroom</u>				
Meeting Room No.		1	4	3	2	5
31 May (MON)	15:15 – 17:00	B(a)	C(a)	D(a)	E(a)	G(a)
		<i>Supper</i>				
	18:30 – 21:30	Poster Sessions at <u>Ballroom</u>				
01 June (TUE)	08:00 - 10:00	B(b)	C(b)	D(b)	E(b)	G(b)
		<i>Coffee Break</i>				
	10:30 – 12:00	B(c)	C(c)	D(c)	E(c)	G(c)
		<i>Lunch</i>				
	13:00 – 15:00	B(d)	C(c)	D(d)	F(a)	F(b)
		<i>Coffee Break</i>				
	15:30 – 17:30	H(a)	H(b)	D(e)	H(c)	F(c)
	Evening	<i>Conference Banquet</i>				
02 June (WED)	Whole day	<i>Visiting World Expo 2010</i>				
03 June (THU)		<i>Checking out</i>				
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)



会场分布图 (3F)



Ballroom	
31 MAY (MON)	OPENING CEREMONY & PLENARY SESSIONS
	Opening Ceremony Chair: Prof. Weimin ZHANG
08:00 - 08:40	<p>Prof. Wenjun ZHANG (SJTU President)</p> <p>Dr George E Totten (Conference Chair)</p> <p>Dr Robert B Wood (IFHTSE Secretary General)</p>
	Plenary Session A(a) Chair: Prof. Evan MA
08:40 - 09:50	<p>A1 George E Totten Process modeling for heat treatment: Current status and future developments</p> <p>A2 T Inoue A Mechanism of transformation plasticity and the identification of the characteristics</p>
09:50 - 10:20	Coffee Break
	Plenary Session A(b) Chair: Prof. T Inoue
10:20 - 12:05	<p>A4 Jianguo LIN Hybrid forming processes for the production of lightweight high-strength automotive panel parts</p> <p>A7 Jian LU Integrated design of product and component realized by thermal processes with pre-stressed engineering approach</p> <p>A5 S Denis Prediction of heat treatment residual stresses and distortions: Recent developments</p>
12:05 - 13:00	Lunch
	Plenary Session A(c) Chair: Prof. Jian LU
13:00 - 14:45	<p>A6 Baicheng LIU Modeling and simulation on deformation of heavy hydro turbine castings during casting and heat treatment processes</p> <p>A3 Jiansheng PAN Green heat treatment – the sustainable way of industrial developments</p> <p>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

Date & Time	Room No. 1	Room No. 4	Room No. 3	Room No. 2	Room No. 5
31 MAY (MON)	PARALLEL SESSIONS - 1				
15:15 - 17:00	Session B(a) Chairs: Profs. Xuejun JIN & Huiping LI B13 Bo WU B12 Chaoyang SUN B03 Zhuo YU B10 Gangbo TANG D11 Jun DING	Session C(a) Chairs: Profs. S MacKenzie & D Landek E04 BL Ferguson C09 Zhichao LI C10 K Cvetkovski C01 Weimin GAO C14 Tao CONG	Session D(a) Chairs: Profs. Jianguo LIN & A Gontarz D01 A Gontarz D02 Z Pater D03 Haibo XIE D04 Xiawei YANG D07 Jixiang ZHANG	Session E(a) Chairs: Profs. Liu-Ho CHIU & T Luebben E01 Young-Kook LEE E06 S Mackenzie E09 Dae-Hoon KO E02 T Luebben E03 J Rath	Session G(a) Chairs: Profs. Hao LU & Bolin HE G13 Hsin-Chih LIN G06 Yongcheng LIN G07 Jihong YANG G11 Changwen CUI G09 Zhenhai XU
17:00 - 18:00	Supper				
Date & Time	Room No. 1				
31 MAY (MON)	POSTER SESSIONS				
18:30 - 21:30	b09 Jing WU b11 Naqiong ZHU b16 Xiangying MENG b26 Shikun XIE b27 Shanglei YANG b28 Hong DING b30 Ping DONG b33 Ning YU	c15 H Yahagi c19 Huiping LI c21 Xunwei ZUO c22 Yingli ZHAO c23 Dongying JU	d10 Xiangru LIU d15 Ben ZENG d17 Lin CHEN d27 Guanyu DENG d29 Shu GUO d30 Junqing GUO d31 Xiaochun MA d32 Junguang HE d33 Lei ZHANG d34 Yu ZHANG d39 Bin TANG d42 Yongge FANG	f11 Yitao YANG f15 Zhijun YANG g04 Yansong ZHANG g08 A Sliwa g14 Yong SUN g15 Bolin HE g16 Wenya LI g17 Yong HU g18 Zhi ZHANG	h08 Yinghua JIANG h21 Yusen YANG h22 T Ghrib h23 Jiuba WEN h24 Wenliang WANG h25 Peng ZHANG h27 Jingfeng SHAO

Date & Time	Room No. 1	Room No. 4	Room No. 3	Room No. 2	Room No. 5
01 JUNE (TUE)	PARALLEL SESSIONS - 2				
	Session B(b) Chairs: <i>Profs. Baicheng LIU & Bo WU</i> B32 Yao SHEN B25 Xueshao QIU B24 Wei YOU B06 Weimin GAO B17 Likun ZHANG	Session C(b) Chairs: <i>Profs. S Denis & M Reich</i> B20 <u>Jer-Ren YANG</u> C03 M Reich C08 Dongmei ZHU C02 K Babu C07 D Landek C05 Guoyong LIU	Session D(b) Chairs: <i>Profs. B Rivolta & Yanlin HE</i> D41 <u>Fuxing YIN</u> D14 Yongcheng LIN D09 Yanlin HE D12 Xudong ZHOU D40 Ganlin XIE D23 Jixiang ZHANG	Session E(b) Chairs: <i>Profs. M NARAZAKI & Ning YU</i> E16 <u>M Narazaki</u> E07 J Ahlstrom E08 F Frerichs E10 MV LI E13 Guanjie YUAN	Session G(b) Chairs: <i>Profs. M Rachik & Wenya LI</i> G01 Jianglin HUANG G03 Huajun ZHANG G05 Liang CHEN G20 R Shateri G02 Ali Slimani D35 Huagui HUANG
10:00 - 10:30	Coffee Break				
01 JUNE (TUE)	PARALLEL SESSIONS - 3				
	Session B(c) Chairs: <i>Profs. Zhaohui JIN & Ping ZHANG</i> B21 <u>Xuejun JIN</u> B08 Rongda ZHAO B15 Zhenhuan ZHENG B19 Tuo CHEN	Session C(c) Chairs: <i>Profs. Jer-Ren YANG & BL Ferguson</i> E05 <u>S MacKenzie</u> C11 <u>Xiaodong HU</u> H04 Min FENG C13 MK Torbati	Session D(c) Chairs: <i>Profs. Liwen ZHANG & Jixiang ZHANG</i> B02 <u>B Rivolta</u> D08 Weiming ZENG D37 Xiao ZHAO D38 Minjie LAI	Session E(c) Chairs: <i>Profs. Young-Kook LEE & T UEHARA</i> E15 Liu-Ho CHIU E11 V Shchukin E12 T Uehara	Session G(c) Chairs: <i>Profs. Hsin-Chih LIN & Wenliang WANG</i> G10 Lin MA G12 Dejun KONG B05 Yaogen SHEN G19 Yi-Shiun DING
10:30 - 12:00	Lunch				
12:00 - 13:00	Lunch				

Date & Time	Room No. 1	Room No. 4	Room No. 3	Room No. 2	Room No. 5
01 JUNE (TUE)	PARALLEL SESSIONS - 4				
	Session B(d) Chairs: Profs. Yao SHEN & Yaogen SHEN B31 Jihua ZHANG B23 Maohua LIN B14 Yongqiang LONG B22 Chaohui ZHANG B18 Guoxin YE	Session C(d) Chairs: Profs. Wei SHI & L Petrova C06 Wei SHI C16 L Petrova H09 Tei-Chen CHEN C18 Jian XU C20 N Svetushkov	Session D(d) Chairs: Profs. Dongyin JU & Huagui HUANG D16 Liwen ZHANG D25 Yanshu ZHANG D26 Yuwen ZHAI D06 Jisen QIAO D22 Lu LU D05 Tingfang ZHANG	Session F(a) Chairs: Profs. P Gardin & Yitao YANG F09 Shuang-Shii LIAN F13 Xiaohua ZHAO B01 P Gardin F04 Shikun XIE F12 Liang HE	Session F(b) Chairs: Profs. NK Prabhu & Fuxing YIN B04 Jianzheng GUO F02 Lijia HE F01 NK Prabhu F06 Rongzhen XIAO F05 Li WANG
15:00 - 15:30	Coffee Break				
01 JUNE (TUE)	PARALLEL SESSIONS - 5				
	Session H(a) Chairs: Profs. Tei-Chen CHEN & I Potrc H07 Yu ZHANG H10 Mei ZHANG H11 Ying BA H12 Yeqiong WU H13 Guofei LIU H20 Lei LU	Session H(b) Chairs: Profs. Duc Hai Do & Sheng WANG H01 B Samec H02 G Oder H03 Duc-Hai DO H05 Haiwei ZHENG H06 Zhiyin XIE H19 Zhong ZHENG	Session D(e) Chairs: Profs. Lin CHEN & Z Pater D13 Zhu SU D18 Lin CHEN D19 Lin CHEN D20 Kun CHEN D21 Dong HE D36 Hua WANG	Session H(c) Chairs: Profs. J Ahlstrom & Junxiao FENG H14 Guohua LI H28 Zhibin SUN H29 Sheng WANG H15 Wenjun ZHAO H16 Linghang XING H18 Yanzhe LI	Session F(c) Chairs: Profs. Shuang-Shii LIAN & Jianfeng GU F14 Enyu GUO F08 Guiyong WU F03 Baiyang LOU F07 Hongmin GUO
15:30 - 17:30	Conference Banquet				
18:00 - 20:00	Conference Banquet				

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_2AlN 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-xM_x-based alloy with ThMn₁₂ prototype by combining thermodynamic model with first-principles calculations

Session C(b) Meeting room No. 4**Chairs: Profs. S Denis & M Reich**

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

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**

- 10:30 – 10:55 **E05 - Keynote S MacKenzie** (*Houghton International, Inc., USA*)
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, Taiwan*)

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 Yüewen 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 melting 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 $M_{23}C_6$ 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-L2₁ 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 quenchant 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