



الجمعية المصرية للمعالجة الحرارية للفلزات والسبائك

EGYPTIAN HEAT TREATMENT SOCIETY (EHTS)
INTERNATIONAL FEDERATION
OF HEAT TREATMENT AND SURFACE ENGINEERING
(IFHTSE)



1st Mediterranean Conference on Heat Treatment & Surface Engineering

**"Heat Treatment and Surface Engineering in the Manufacture of
Metallic Engineering Components**

**Pyramisa Sharm El-Skeikh Hotel, Egypt
December 1 – 3, 2009**

Tentative Conference Program

MONDAY, 30 NOVEMBER 2009

06.00 am

Departure from Cairo to Sharm

14.00 pm

Arrival to Pyramisa Hotel (Check in)

14.00 – 15.00 pm

Lunch

17.00 – 18.00

Registration

18.00 – 18.45 pm

Welcome Reception

TUESDAY, 1 DECEMBER 2009

08.00 – 09.00

Registration

**OPENING CERMONY
LOCATION: ATON HALL 1**

09.00 – 09.10

Chairman's Welcoming

Prof. Dr. M. HUSSEIN

EHTS Chairman, TIMS, Egypt

09.10 – 09.25

Prof. Dr. D. DOYLE

IFHTSE President

09.25 – 09.35

Ministerial Address

Prof. Dr. M. NASR

Representative of Ministry of Scientific Research, Director of CRMDI

09.35 – 09.45

Ministerial Address

Representative of Ministry of Trade and Industry

09.45 – 10.15

Tour of Exhibition Area / Tea Break

SESSION 1: KEYNOTE LECTURES
LOCATION: ATON HALL 1

Chairman – Prof. J. GRUM (Slovenia) - Co-Chairman – Prof. M SULTAN (Egypt)

10.15 – 10.45

Innovation in Nitriding

Prof. Dr. D. DOYLE

Royal Melbourne Institute of Technology, Australia, and IFHTSE
President

10.45 – 11.15

Global 21, IFHTSE Project to Help Planning in the Heat Treatment and Surface Engineering Industry.

Prof. Dr. Z. KOLOZSVARY*, R.. WOOD**

*SC, Plasmaterm, Romania SA, IFHTSE Treasurer -

**Secretary General IFHTSE , England

11.15 – 11.45

Modeling and Simulation of Heat Treatment and Surface Engineering for Process Development and Optimization.

Prof. Dr. R. SISSON, G. WANG

Worcester Polytechnic Institute, USA

11.45 – 12.15

New Tool Steels and Their Interrelationship with Modern Heat Treatment Process.

Prof. Dr. R. SCHNEIDER, R. MESQUTTA

Upper Austria University of Applied Sciences, Wels, Austria;
Universidade Nove de Julho (UNINOVE), Sao. Paulo, Brazil.

12.15 – 12.45

Computer Simulation of Mechanical Properties of Quenched and Tempered Steel Shaft

Prof. Dr. B. SMOLJAN , D. ILJKIĆ, F TRAVEN

University of Rijeka, Faculty of Engineering, Croatia

13.00 – 14.00

LUNCH BREAK

AFTERNOON SESSION

SESSION 2

LOCATION: ATON HALL 1

Chairman – Prof. R. SCHNEIDER (Austria), Co-Chairman – Prof. ZOMOR (Egypt)

14.00 – 14.20

Comparison of the Microstructure, Mechanical and Corrosion Properties of duplex and Super Duplex Stainless Steels Subjected to Aging in the Range 475 – 950 ° C

M. R. EL-KOUSSY, N. A. RAHEEM, R. ABDEL KAREEM, M. S. ABDEL RAHMAN

Faculty of Engineering, Cairo University, Egypt.

14.20 – 14.40

The Concept of the Creation of Multifunctional Self Organizing Economical Meta-Stable Alloys of a New Generation.

O. CHEILAKH, I.V. KOLODYAZHNAYA

Priazovsky State Technical University (PSTU), Ukraine.

14.40 – 15.00

Optimizing Heat Treatment Requirements for Improved Toughness of V-Containing 3% NiCrMo-Steel

Prof. Dr. I. EL-MAHALLAWI *, S. EI BANNA, M. MORSI****

British University in Egypt (BUE), Egypt.

15.00 – 15.20

Crack Identification by Sound Emission during Steel Quenching

Franc RAVNIK, Janez GRUM

University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia.

15.20 – 15.40

Heat Treatment of Duplex Stainless Steel (SAF2205) Welded Joint

S. KHAFAGY*, M. MORSY*, F. MOLLED**, and J. SUAREZ*****

*Tabbin Institute for Metallurgical Studies TIMS, Egypt.

**Central Metallurgical R&D Institute CMRDI

***E.T.S.I. Navales de la U.P.M

15.40 – 16.00

Influence of Heat Treatment on Mechanical Properties of Austenitic Stainless Steels

Dr. S. GHALI, M. Eissa, H. Rabie, T. Mattar & A. Fathy

Central Metallurgical R&D Institute (CMRDI), Egypt.

16.00 – 16.20

Effect of Niobium and Nitrogen Addition on Secondary Hardening of Super Hard AISIM41 High Speed Tool Steel.

Dr. H. HALFA, M. Eissa, K. El-Fawakhry, T. Matter

Central Metallurgical R&D Institute (CMRDI), Egypt.

16.20 – 16.40

Effect of AlN Precipitation and Hot Rolling Process on the Microstructure and Properties of Low Carbon Steel Produced Through EAF-Thin Slab Casting Technology at Ezz Flat Steel.

S. PAUL, U. Ahmed, M. Ibrahim, A. Fathy & G.M. Megahed

Ezz Flat Steel, Ain Sokhna, Suez, Egypt.

16.40 – 17.00

Thermo-Mechanical Processing of 42CrMoS4 Steel

O.TAHA*, M. NABIL*, T. ELBITAR, I. EL MAHALLAWI***

*Faculty of Engineering , Cairo University, Egypt.

** Central Metallurgical R&D Institute (CMRDI), Egypt.

SESSION 3
LOCATION: ATON HALL 2

Chairman – Prof. Z. KOLOZSVARY (Romania), Co-Chairman – Prof. S. KHALIL (Egypt)

14.00 – 14.20

Ways to Accelerate the Kinetics of Nitrogen Mass Transfer Process at Nitriding

L. N. DRUGĂ *, M. O. COJOCARU **, D. DRAGOMIR ***

* , *** INTEC SA Bucharest, Heat Treatment and Surface Engineering Laboratory, Bucharest, Romania.

**University “Politehnica”, Science and Materials Engineering Faculty, Bucharest, Romania.

14.20 – 14.40

Mechanical Properties of PVD Coatings on TiC Based Cermets.

R. VEINTHAL *, C. E. YALDIZ **, A. GREGOR *

*Tallinn University of Technology, Estonia.

**RWTH Aachen, Werkzeugmaschinenlabor RWTH Aachen, Germany.

14.40 – 15.00

Role of Activators on the Thermo-Chemical Stability of Aluminide Coating of Low Carbon Steel.

M. ALNABHAN*, I. HAMED, A.M. BASTAWISY**,
T.E.FARRAG** , A.A. HUSSEIN*****

* Petrochemical Industries Co., Kuwait.

** Chem. Eng. Dept., Faculty of Eng., El-Minia University, Egypt.

*** Kuwait Institute for Scientific Research, Kuwait.

15.00 -15.20

Wear Properties of Duplex Treated Surfaces

P. KULU, A. SURŽENKOV, M. SAARNA

Tallinn University of Technology, Estonia.

15.20 – 15.40

Estimation of Fracture Toughness of Nitrided Layers on Tool Steel by Application of Vickers Indentation Method.

V. LESKOVESK, M. JENKO, J. TUMA

Institute of Metals and Technology, Ljubljana, Slovenia.

15.40 – 16.00

Effect of Thermal Oxidation to the Substrate on Properties of the RuO₂-TiO₂ Coated Titanium Anode

Dian TANG*, Xianghua ZHONG*, Teng ZHANG*, Zhongzhi TANG **

*Institute for Materials Research, Fuzhou University, Fuzhou . China

**Center for Materials Research, Missouri University of Science & Technology, USA

16.00 – 16.20

Application of Photonic Crystal Concept in Designing of Optical Thin Film Filter

Y. XIONG , J. WANG, H. LIU, T. CHEN, D. WANG

National Key Laboratory of Surface Engineering, Lanzhou Institute of Physics, China

16.20 – 16.40

Evaluation of Fatigue Resistance of Low Carbon Steel under Effect of Carburizing Media.

M. RAJAB

Baquba tech. inst. Iraq.

16.40 – 17.00

Technique of Calculation of the Ecological Indices of Metal Heating in Fuel Furnaces

I.TORINA, M. BUTORINA, Y. ULAMOV

Saint-Peterburg State Technological University , Russia

WEDNESDAY, 2 DECEMBER 2009

SESSION 4 KEYNOTES LECTURES

LOCATION: ATON HALL 1

Chairman – Prof. D. DOYLE (Australia) - Co-Chairman – Prof. R. EL-KOUSSY (Egypt)

09.00– 11.00

Preparation and Characterization of Surface Treated and Coated Steels

G. F. Vander VOORT

Director, Research & Technology, Buehler Ltd, USA

11.00 - 11.30

Tour of Exhibition Area / Tea Break

SESSION 5, Heat Treatment of Cast Iron and steel

LOCATION: ATON HALL 1

Chairman – Prof. LESKOVESK (Slovenia) , Co-Chairman – Prof. M. NASR (EGYPT)

11.00 – 11.20

Advances in the Heat Treatment of Austempered Ductile Cast Iron

Prof. Dr. A. NOFAL

Central Metallurgical R&D Institute (CMRDI)

11.20 – 11.40

Influence of Laser Remelted Microstructure of Cast Irons on Residual Stresses

R. ŠTURM, J. GRUM

University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia

11.40 – 12.00

Effect of Heat Treatment and Titanium Additions on Wear Resistance and Impact toughness of White Cast Iron

Khaled M. IBRAHIM, Adel A. NOFAL and Mervat M. IBRAHIM

Central Metallurgical R&D Institute (CMRDI), Egypt

12.00 – 12.20

Microstructure, Mechanical Properties And Impact Toughness of Austempered And Low Alloyed Spheroidal Graphite Cast Iron

O.HUSSEIN*, N. FATALLA**

*El Nasr Castings Company, Egypt

**Faculty of Engineering, Al Azhar University, Egypt

12.20 – 12.40

The Creation Of A New Economical (Nickel Free) Powder-Like Wire For Surfacing Made of Metastable Metal, Self-Strengthened During Wearing

Y.A. CHEILIAKH, V.V. CHIGREV, G.V. SHEYCHENKO

Priazovsky State Technical University (PSTU), Ukraine

12.40 – 13.00

Advanced High Strength Steels for Automakers

S. KHALIL

Tabbin Institute for Metallurgical Studies (TIMS)

13.00 – 14.00

LUNCH BREAK

SESSION 6, Surface Treatment
LOCATION: ATON HALL 2

Chairman – Prof. D. TANG (China), Co-Chairman – Prof. Y. BARAKAT (Egypt)

11.00 – 11.20

Sustainable Substitution of Traditional Heat Treatment Processes by Plasma Assisted Surface Treatment. A Vision or State of the Art ?

R. NÖBAUER*, T. MÜLLER, F. SCHUCH*, A. GEBESHUBER**

*Rübig GmbH & CO. KG. Wels, Austria.

**Schuch Consulting KEG., Steyr, Austria.

11.20 – 11.40

An All-Solid-State Electrochromic Device for Thermal Control of Spacecraft

Y.C.HE, J. W. QIU, C. H. WU, M. XU

Lanzhou Institute of Physics, Lanzhou, China

11.40 – 12.00

Study On The Hardfacing Of The Low Alloy Steel Screw Conveyor

M. AMIN*, S. M. KHAFAGY and B. ZAGHLOOL***

*CMRDI, Cairo, Egypt,

** TIMS Cairo, Egypt

12.00 – 12.20

Technical and Economical Study on Hardfacing Techniques

M. ELSHENAWI

El-Fayoum University, Egypt.

12.20 – 12.40

Mechanic Properties of Ti-Doped DLC Multilayer by Pulse Cathodic Arc Deposition

N.REN, D. C. ZHAO

Lanzhou Institute of Physics, Lanzhou, China

12.40 – 13.00

Structures and Accelerated Lives of $Ru_xIr_{1-x}O_2$ Coatings Prepared by a Pechini Method

Y. SHAO, H. GUO, D. TANG, Fu GAOSHENG, Shizhen HUANG
Institute for Materials Research, Fuzhou University, China.

13.00 – 14.00

LUNCH BREAK

AFTERNOON SESSION

SESSION 7

LOCATION: ATON HALL 1

Chairman – Prof. P. KULU (Estonia), Co-Chairman – Prof. I. HAMED (Egypt)

14.00 – 14.20

Laser Surface Hardening of Tool Steels, Experimental and Numerical Analysis

R. RAMADAN, A. EL-BATAHGY**, A. MOUSSA**

*Egyptian Iron and Steel Co.

** CMRDI

*** Faculty of Engineering, Helwan University, Egypt

14.20 – 14.40

Research on Deposition Technology of SiO_2 Film with Good Abrasion Resistance and High Transmission by Ion-Assisted Method

D. WANG, C. LUO, T. CHEN, J. WANG, Y. XIONG, H. K. LIU
Lanzhou Institute of Physics, Lanzhou, China.

14.40 – 15.00

Surface Modifications and Amorphization Introduced by High Energy Ion Radiation of the Semiconductor Indium Phosphate Compound.

A. S. KHALIL

Tabbin Institute for Metallurgical Studies (Egypt)

15.00 – 15.20

Modifying PdO Coating by Pt Nano-Particles to Improve Electrochemical Properties

L. LI, X. WANG, D. TANG

Lanzhou Institute of Physics, Lanzhou, China.

15.20 – 15.40

Carbon Nano-Particles Coated on TiO₂ Nano-Fibers and its Photocatalytic Activity

Z. Chen.*, C.Lu, H. Han, X. Zeng, R. Chen, X. Chen

Fujian Normal University, Fuzhou, Fujian, China.

16,00 – 17.00

ATON HALL 1

WORK SHOP / PANEL DISCUSSION

Global 21, IFHTSE Project to Help Planning in the Heat Treatment and Surface Engineering Industry.

Prof. Z. KOLOZSVARY

SESSION 8

LOCATION: ATON HALL 2

Chairman – R. VENTHAL (Estonia), Co-Chairman – Prof. M. HADHOUD, (Egypt)

14.00 – 14.20

Study of Anisotropy of Two Aluminum Alloys Obtained by Two Methods of Rapid Solidification

F. SERRADJ*, R. GUEMINI, H. FARH**, K. DJEMMAL****

*Université de Constantine , Algeria.

**Université d'Oum el Bouaghi, Algeria.

14.20 – 14.40

Influence of Annealing Temperatures on Surface Formation and Mechanism of DC Conducting Thermally Evaporated Nanocrystallite Structure ZnIn₂Se₄ Thin Film.

H. ZEYADA^{*}, M. EL-NAHASS^{}**

^{*}Department of Physics, Faculty of science at Damietta, , Egypt.

^{**}Department of Physics, Faculty of education, Ain Shams University, Egypt

14.40 – 15.00

Aluminum Quenching by Array Water Jets

Kh. ABDEL-RAHMAN, A.K. NALLATHAMBI, U. ALAM, E. SPECHT

Otto von Guerick University, Magdeburg, Germany.

15.00 – 15.20

Thermo-Mechanical Behavior Modeling of Shape Memory Alloys and Estimation of their Absorption Capacity of the Strain Energy

B. NECIB, M. SAHLI

University Mentouri Constantine, Algeria.

15.20 – 15.40

Study of the Precipitation and the Effect of Natural Aging Subsequent Artificial Aging on the Resistivity Evolution of Al-Mg-Si Alloy.

F. SERRADJ^{*}, R. GUEMINI^{}, H. FARH^{**}, K. DJEMMAL^{**}**

^{*}Université de Constantine , Algeria.

^{**}Université d'Oum el Bouaghi, Algeria.

16.00 – 17.00

ATON HALL 1

WORK SHOP / PANEL DISCUSSION

Global 21, IFHTSE Project to Help Planning in the Heat Treatment and Surface Engineering Industry.

Prof. Z. KOLOZSVARY

17.30 – 19.00 IFHTSE GC Meeting

POSTER PAPERS

- 1. Weldability of Brittle Materials Toughened By Ductile Reinforcements**
M..EL-MENIAW*, **S.M.KHAFAGY**** & **Y.FOUAD*****
*Faculty of Engineering, Zagazig University, Egypt
**Tabbn Institute for Metallurgical studies, , Egypt
*** Higher Technological Institute, Tenth of Ramadan City, Egypt

- 2. Prediction Of Over-Tempering During Rapid Induction Heating**
C. DUCASSY*, **F. BRIDIER***, **P. BOCHER***, **P. ARKINSON****
*École de Technologie Supérieure, Montréal, Québec, Canada
**Pratt&Whitney Canada, Longueuil, Québec, Canada

- 3. Electrochemical Behavior Of Aluminized Steel In Saline Electrolyte**
I. HAMED*, **A. BASTAWESY***, **A. HUSAIN**** , **M. AL-NABHAN***** , **T. FARRAG***
* Faculty of Eng., El-Minia University, Egypt.
* Kuwait Institute for Scientific Research, Kuwait.
** Petrochemicals Industries, Kuwait.

- 4. Quality Assessment of 12 Ni Maraging Steel after Powder Laser Surfacing and Subsequent Heat Treatment**
Z. BERGANT*, **J. M. SLABE****, **J. GRUM***, **J.L. OCANA*****
*University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia
**Slovenian Technology Agency, Ljubljana, Slovenia
***Centro Láser U.P.M. Ctra. deValencia, 28031 Madrid, Spain

- 5. Effect of Case Hardening Process of Alloy Steels on Their Characteristics**
M. EL-HEBEARY* , **A. EL-BAHLOUL**** , and **E. EL-SAWY*****
* Faculty of Engineering, Cairo University.
** Faculty of Engineering, Mansoura University.
*** Head of Machining work shop, H.M.E.F

6. Experimental Study of End-Milling of Steel AISI 1060 for Optimum Surface Roughness

S. A. MASHAT^{*}, O. K. ALSHOGBI,^{} S. H. ESHTEWI^{**}**

^{*} Mechanical Engineering Academy of Graduate Studies, Tripoli Libya

^{**} Mechanical and industrial Engineering Department, Al-Fateh University, Tripoli, Libya.

7. The Effect Of The Dispersoid On The Recrystallization Behaviour In Almgisi Alloys

Fares SERRADJ^{*}, rebai GUEMINI^{}, Hichem FARH^{**}, karim DJEMMAL^{**}**

^{*}Laboratoire de Propriétés Thermodynamiques et des Traitements des Surfaces des Matériaux (LPTTSM), Université de Constantine, Algérie.

^{**}Département de Physique, Faculté des Sciences Exactes, Université d'Oum el Bouaghi, Algérie

8. Oxidation Behavior of Fe₃Al-5Cr- (0, 0.5, 1.5) Ti Alloys at Temperature Ranges from 800 °C to 1200 °C

H. HALFA

Central Metallurgical R&D Institute (CMRDI)

9. Concept Of Real Time Quality Control On The Induction Hardening Machines

Gy. KELEMEN, G. MOLNAR

AAGES Ltd. Tg. Mures, ROMANIA

THURSDAY, Dec. 3, 2009

09.00 – 10.00

ATON HALL 1

CLOSSING SESSION

Conclusions and Recommendations.

11.00

Departure to Cairo