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
Arrive 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 CEREMONY
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
Prof. Dr. R. SCHNEIDER, R. MESQUITTA
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 CMRD
***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. GHALL, 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 AISI M41 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.**
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.
* 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 RuO$_2$-TiO$_2$ 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 Alloved 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$_x$Ir$_{1-x}$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

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**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.**
**CMRDII***
***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 Semicondutor 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**
*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 ZnIn$_2$Se$_4$ 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**
   *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 Almgsi 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

CLOSING SESSION

Conclusions and Recommendations.

11.00

Departure to Cairo