

# Sixth Asian Conference on Heat Treatment and Surface Engineering

*Organized by*

**ASM International Chennai Chapter**

*In association with*

**International Federation of Heat Treatment and Surface Engineering (IFHTSE)**

## Conference Program

Time (Hrs.)	Day 1: 5 <sup>th</sup> March, 2020 (Thursday)	
08:15 – 09:00	<b>REGISTRATION</b>	
09:15 – 10:30	<b>INAUGURAL FUNCTION</b>	
10:30 – 11:00	<b>VISIT TO EXHIBITION &amp; TEA BREAK</b>	
	<b>Keynote Session – 1</b> <b>Session Chair:</b> Dr. Eva Troell, Vice President, IFHTSE & RISE IVF, Sweden	
11:00 – 11:30 KL1	<b>The Structure and Properties of Thermal Spray Coatings</b> <i>Prof. Christopher Berndt, Swinburne University of Technology, Australia</i>	
11:30 – 12:00 KL2	<b>On the Bio-inspired computational methods and AI technics supporting Heat Treatment processes</b> <i>Prof. Imre Felde, Obuda University, Hungary</i>	
12:00 – 12:30 KL3	<b>A Research and Development Roadmap to Benefit the Heat-treating Industry</b> <i>Mr. Michael Pershing, Caterpillar Inc., USA</i>	
12:30 – 13:00 KL4	<b>The Yoga of Failure Analysis: Materials Engineering as a Path towards Insight</b> <i>Ms. Debbie Aliya, Aliya Analytical, USA</i>	
13:00 – 14:00	<b>LUNCH</b>	
	<b>Keynote Session - 2</b> <b>Session Chair:</b> Dr U. Kamachi Mudali, Chairman 6 <sup>th</sup> AHTSE 2020	
14:00 – 14:30 KL5	<b>Direct gas carburizing using hydrocarbon and nitrogen with water vapor</b> <i>Prof. Masahiro Okumiya, Toyota Technological Institute, Japan</i>	
14:30 – 15:00 KL6	<b>Current status of Additive Manufacturing - Myths and Realities</b> <i>Dr. Ramesh Raghavendra, Waterford Institute of Technology, Ireland</i>	
	<b>HALL - A</b>	<b>HALL - B</b>
	<b>Technical Session 1A</b> <b>Session Chair:</b> Dr. Zoltan Kolozsvary, SC Plasmaterm SA, Romania	<b>Technical Session 1B</b> <b>Session Chair:</b> Dr. Srinivasa Rao Bakshi, IIT Madras
15:05 – 15: 20	<b>IL-01: Case hardening by LPC and Oil and Gas Quenching for high volume production</b> <i>Manoranjan Patra, SECO/WARWICK. India</i>	<b>IL-04: Thermal Spray Technology to combat Rolling Contact Fatigue and Thermal/Traction Defects</b> <i>Siva P., Nirmal Saha, Vinod Patil and Babu P.K., EWAC Alloys Ltd., Gujarat</i>

15:20 – 15:35	<b>IL-02: Vacuum Heat Treatment, Low pressure carburizing in the Mass/Serial Production (IL03)</b> <i>Ulrich Dittrich, ALD Vacuum Technologies India Pvt. Ltd, Mumbai</i>	<b>IL-05: Fire protective intumescent coatings for loadbearing steel elements</b> <i>Marco Antonelli, Promat Training &amp; Conferences, Belgium</i>
15:35 – 15:50	<b>IL-03: Plasma nitriding (ion-nitriding) of Maraging steel 250 grade for a Complex part</b> <i>Kishora Shetty, Boeing India Pvt Ltd, Bengaluru</i>	<b>IL-06: Influence of Tempering Parameters on Liquid Nitriding Properties of AISI 4340 Steel</b> <i>A. Venugopal, S. Shanmugham and V.P. Balaji, WABCO India Pvt Ltd., Chennai</i>
<b>15:50 – 16:05</b>	<b>TEA BREAK</b>	
	<b>Technical Session 2A</b> <b>Session Chair: Mr. N. Gopinath – Fluidtherm Technology, Chennai</b>	<b>Technical Session 2B</b> <b>Session Chair: Dr. T. Sundararajan, Wheels India, Chennai</b>
16:05 – 16:20	<b>IL-07: Endothermic Gas Projection</b> <i>Eric Jossart, United Process Control, USA</i>	<b>IL-13: Nitreg® – family of potential controlled nitriding / nitrocarburizing technologies according to AMS 2759/10 and 2759/12 advantages and applications</b> <i>Nikola Dzepina, Nitrex Metal Inc., Canada</i>
16:20 – 16:35	<b>IL-08: Two new products for heat treatment &amp; surface engineering industry from Techmat group</b> <i>Krishna Iyengar, B K Venkatesh, Senthil Kumar, Maheswaran Lokesh and Vinodh Venkatesan, Techmat Group, Chennai</i>	<b>IL-14: High speed nanomechanical property mapping of thermal barrier coatings</b> <i>P. Sudharshan Phani<sup>1</sup>, B. Vignesh<sup>1</sup>, G. Siva Kumar<sup>1</sup> and Warren Oliver<sup>2</sup></i> <i><sup>1</sup>ARCI, Hyderabad, <sup>2</sup>KLA Corporation, USA</i>
16:35 – 16:50	<b>IL-09: Surface Engineering in Additive Manufacturing</b> <i>T.S. Sudarshan, Materials Modification Inc., USA</i>	<b>IL-15: High Emissivity Coating for High Temperature Applications on TPS in Hypersonic vehicle</b> <i>Subir Roy, S. Rangaswamy Reddy, Narendra Balasaheb Patil and V.V. Bhanu Prasad, DMRL, DRDO, Hyderabad.</i>
16:50 – 17:05	<b>IL-10: Single piece flow heat treatment – innovative technology</b> <i>Manoranjan Patra, SECO/WARWICK, India</i>	<b>IL-16: Heat Treatment Cost Reduction: Preventing Rejections, Reducing Shot Blasting and Reducing Fuel Consumption by the Use of Protective Coatings</b> <i>S. P. Shenoy, Steel Plant Specialities LLP, Mumbai</i>

17:05 – 17:20	<b>IL-11: Modern Vacuum and Plasma Surface Heat Treatment Technologies in Mold design, Automotive and Aviation Industry</b> <i>Juergen Krueger-Holz, Dietmar Voigtlaender, PVA, Germany</i>	<b>IL-17: Dense Ceramic Coatings and Its Process: A new Development</b> <i>Satish Tailor, Ankur Modi and S. C. Modi, Metallizing Equipment Company Pvt. Ltd, Jodhpur</i>
17:20 – 17:35	<b>IL-12: Investigation of surface coated components – Höganäs way</b> <i>Vipul Utkar, Amitava Sen, Hogganas, Pune</i>	<b>CL-02: Diffusion bonding process to get Conformal cooling in Injection moulding process</b> <i>S.K Subramanian and V. Venkatasubramanian, Nathan &amp; Nathan Global Inc., Bengaluru</i>
17:35 – 17:50	<b>CL-01: A Comparative performance study with special surface treatment processes for high durable gear shifting fork application</b> <i>Ezhilarasi C. and Magendran G., Mahindra &amp; Mahindra Ltd., Chennai</i>	<b>CL-03: Effect of Laser Clad parameters on microstructure of Cr<sub>3</sub>C<sub>2</sub>-NiCr Coatings designed for elevated temperature erosion resistant applications</b> <i>Ratnesh Pandey, Mohan Bharathi, Ajit Hebbal, Manish Tak, G. Sivakumar, D. Srinivasa Rao and G. Padmanabham, ARCI, Hyderabad</i>
<b>17:50 – 19:00</b>	<b>Visit to Poster Session (P01-P20) &amp; Exhibition</b>	
<b>19:00 – 21:30</b>	<b>Cultural Program &amp; Banquet Dinner</b>	

<b>Day 2: 6<sup>th</sup> March, 2020 (Friday)</b>		
	<b>Keynote Session - 3</b> <b>Session Chair:</b> Prof. M. Kamaraj, IIT Madras	
09:00 – 09:30 KL7	<b>Challenges and provocations in materials science and surface engineering at the beginning of the 21st century</b> <i>Dr. Zoltan Kolozsvary, SC Plasmaterm SA, Romania</i>	
09:30 – 10:00 KL8	<b>Electroless nickel-boron coatings, can it replace hard chrome?</b> <i>Prof. Véronique Vitry, Université de Mons, Belgium</i>	
10:00 – 10:30 KL9	<b>Modern Approach to the Quality Control of HT Processes Based on CQI-9 Requirements</b> <i>Mr. Damian Bratcher, Super Systems Inc., USA</i>	
10:30 – 11:00 KL10	<b>Advanced Concepts in Furnace Design: Continuous Furnaces with Rapid Gas Quenching for Emerging Applications</b> <i>Mr. N. Gopinath, Fluidtherm Technology, Chennai</i>	
<b>11:00 – 11:20</b>	<b>TEA BREAK</b>	

	HALL – A	HALL - B
	<b>Technical Session 3A Session Chair:</b> Mr. Michael Pershing, Caterpillar Inc. USA	<b>Technical Session 3B Session Chair:</b> Prof. Imre Felde, Obuda University, Hungary
11:20 – 11:35	<b>IL-18: Nitriding-Control the process</b> <i>Damian Bratcher, Super Systems Inc., USA</i>	<b>IL-25: Wear and friction behavior of laser clad iron based alloy at elevated temperature</b> <i>Nikita Mohite and Mangesh Patil, Hoganas, Pune</i>
11:35 – 11:50	<b>IL-19: Selection of Base Stocks for Enhanced Performance of Quenching Oils</b> <i>Gautam N. Mehra, Savita Group, Mumbai.</i>	<b>IL-26: Hot Corrosion-Erosion Behavior of HVOF Sprayed WC-Co/NiCrFeSiB Coatings on Boiler Tube Steels</b> <i>M.R. Ramesh<sup>1</sup>, S. Prakash<sup>2</sup> and S.K. Nath<sup>2</sup></i> <i><sup>1</sup>NIT Surathkal, <sup>2</sup>IIT Roorkee</i>
11:50 – 12:05	<b>IL-20: Continuous Nitrocarburising Furnace with Kn Potential Control</b> <i>N. Gopinath and V. Raghunathan, Fluidtherm Technology, Chennai</i>	<b>IL-27: Development of HVOF Sprayed Cr<sub>3</sub>C<sub>2</sub>-NiCr Coating on Grade T91 Tubes of AUSC Boiler</b> <i>Hemant Kumar<sup>1</sup>, Shaju K. Albert<sup>1</sup>, Vivek Arya<sup>2</sup> and Sanjay Pande<sup>3</sup>, <sup>1</sup>IGCAR, Kalpakkam, <sup>2</sup>BHEL, Hyderabad, <sup>3</sup>National Thermal Power Corporation, Prayagraj</i>
12:05 – 12:20	<b>IL-21: Synthesis and Fabrications of Additive Free Electrode Materials for High Performance Li-ion Battery Technologies: Recent Progress</b> <i>Kuldeep Singh Rana, CPRI, Bangalore</i>	<b>IL-28: Importance of Cleaning in Pre and Post Heat treatment processes, Systemic Approach for Total Solution</b> <i>Ashok Konduskar, Henkel Adhesives Technologies India Pvt. Ltd., Mumbai</i>
12:20 – 12:35	<b>IL-22: Improving Furnace Atmosphere Control and Circulation with Close Loop Atmosphere Control System</b> <i>Debashis Roy<sup>1</sup>, Sheetal Mohapatra<sup>1</sup>, Indranil Mukherjee<sup>1</sup> and Michael Graf<sup>2</sup>, <sup>1</sup>Linde India Limited, Kolkata, <sup>2</sup>Linde Gas, Germany</i>	<b>CL-04: Challenges in Localisation of Automotive Coatings &amp; its Validation</b> <i>Rakesh Mahendiran and Prince Lourdu Raj, Renault Nissan Technology &amp; Business Centre India, Chennai, India</i>
12:35 – 12:50	<b>IL-23: ZF- Nitriding</b> <i>Kamil Siedlecki, SECO/WARWICK, Poland</i>	<b>CL-05: Effect of Zinc Phosphate Coating Morphology on the Tightening Characteristics of Threaded Fasteners</b> <i>P. Gokul<sup>1</sup>, P. Shanmugam<sup>1</sup>, S. Ramanathan<sup>2</sup> and M. Kamaraj<sup>2</sup></i> <i><sup>1</sup>Sundram Fasteners Ltd., Chennai, <sup>2</sup>IIT Madras</i>

12:50 – 13:05	<b>IL-24: Comparison of Metal flow Phenomena during Friction Stir Welding and Friction welding of Tube to Tube Plate Using an External Tool Processes</b> <i>S. Muthukumaran, NIT Trichy</i>	<b>CL-06: Development of Plasma sprayed Rare Earth Zirconate based Thermal barrier coatings for enhanced CMAS/VA infiltration resistance</b> <i>Rahul Alroy Jude, K. Praveen, D. Srinivasa Rao and G. Siva Kumar, ARCI, Hyderabad</i>
<b>13:05 – 14:00</b>	<b>LUNCH</b>	
	<b>Keynote Session - 4</b> <b>Session Chair:</b> Prof. Masahiro Okumiya, Toyota Technological Institute, Japan	
14:00 – 14:30 KL11	<b>Heat treatment of additively manufactured steel and selected non-ferrous alloys</b> <i>Prof. Massimo Pellizzari, University of Trento, Italy</i>	
14:30 – 15:00 KL12	<b>Modern vacuum technologies for Aerospace and Defense Industries + Tools &amp; Dies heat treatment in accordance with global standards</b> <i>Dr. Maciej Korecki, SECO/WARWICK, Poland</i>	
15:00 – 15:30 KL13	<b>Prospects for realizing diverse functional coatings by liquid feedstock thermal spraying</b> <i>Prof. Shrikant Joshi, University West, Sweden</i>	
<b>15:30 – 15:45</b>	<b>TEA BREAK</b>	
	<b>Technical Session 4A Session Chair:</b> Dr. Stefan Hock, IFHTSE, Italy	<b>Technical Session 4B Session Chair:</b> Dr. Sushanta Kumar Panigrahi, IIT Madras
15:45 – 16:00	<b>IL-29: Hot Corrosion Studies on Alloy 617 OCC in Ultra- Supercritical Power Plant Environment</b> <i>N. Arivazhagan, VIT Vellore</i>	<b>IL-34: Effect of Equal Channel Angular Pressing and Laser Shock Peening on Magnesium Alloy</b> <i>T. R. Praveen and H. Shivananda Nayaka, NIT Surathkal</i>
16:00 – 16:15	<b>IL-30: How to guarantee reliable hardness test results?</b> <i>John Piller, ZwickRoell, UK</i>	<b>IL-35: Laser Cladding – Unveiling of new possibilities on wear and corrosion protection</b> <i>Amitava Sen and Mangesh Patil, Hoganas India Pvt. Ltd., Pune</i>
16:15 – 16:30	<b>IL-31: Precipitation Hardening Heat Treatments of C250 Grade Maraging Steel and the Resultant Properties</b> <i>M.M. Ghosh and Gaurav Kumar Singh, NIT Durgapur</i>	<b>IL-36: Effect of heat treatment on high cycle fatigue behavior of Inconel 718 processed by selective laser melting</b> <i>Pramod S. and D. Kesavan, IIT Palakkad</i>

16:30 – 16:45	<p><b>IL-32: Effective and Efficient way to achieve Properties and Productivity of Heat-Treated parts by Continuous Conveyor Belt Sub-Zero Tunnel</b></p> <p><i>Debashis Roy<sup>1</sup>, Indranil Mukherjee<sup>1</sup> and Matthias Bors<sup>2</sup>, Linde India Limited, Kolkata, <sup>2</sup>Linde Gas, Germany</i></p>	<p><b>IL-37: Metallurgical understanding of the cryogenic treatment of steel: the role of isothermal martensite</b></p> <p><i>Matteo Villa and Marcel A.J. Somers, Technical University of Denmark</i></p>
16:45 – 17:00	<p><b>IL-33: Smart SICFET Modules for High Frequency Induction Heat Treatment and Tube Welding Applications</b></p> <p><i>Enrique J. Dede<sup>1</sup>, José Jordán<sup>1</sup>, Vicente Esteve<sup>1</sup>, Shesadri B. Chanda<sup>2</sup>, Satadri Chanda<sup>2</sup> and Kazi M. Islam<sup>2</sup>. <sup>1</sup>Smart Induction Converter Technologies S.L, Spain, <sup>2</sup>Emt Megatherm Pvt. Ltd., Kolkata</i></p>	<p><b>IL-38: Influence of phase proportions on the tribological performance of Al<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub> ceramic composite coatings deposited by detonation spray technique</b></p> <p><i>P Suresh Babu, L Rama Krishna, D Srinivasa Rao and G Padmanabham, ARCI, Hyderabad</i></p>
17:00 – 17:15	<p><b>CL-07: Innovative Sensors, Gas Analysers, Measuring technology and its application in Production &amp; Control of Furnace Gas Atmosphere</b></p> <p><i>Manoranjan Rath, AMB Electronic System Tech. Pvt. Ltd, New Delhi</i></p>	<p><b>IL-39: Microstructure and Wear Behaviour of MoSi<sub>2</sub> Reinforced Al-Composites Processed by Stir casting method</b></p> <p><i>Vikas Gadpale and M.K. Manoj, NIT Raipur</i></p>
17:15 – 17:30	<p><b>CL-08: Enhancement of Mechanical Properties for Automotive Exhaust Manifold by Ferritic Annealing</b></p> <p><i>Pillai Pratik, Sivakumar V. and Vijaysankar G., Mahindra &amp; Mahindra Ltd., Chennai</i></p>	<p><b>CL-11: Effects of various aging treatments on microstructures and mechanical properties of beta Titanium alloy Ti-15-3</b></p> <p><i>Anushree Kirthika, Aman Thakkar, R. Santhosh, M. Geetha and M. Nageswara Rao, VIT Vellore</i></p>
17:30 – 17:45	<p><b>CL-09: Mechanical and corrosion response of shot-peened liquid nitrided 316 stainless steel</b></p> <p><i>Nitin Kumar, G.P. Chaudhari, and Sai Ramudu Meka, IIT Roorkee</i></p>	<p><b>CL-12: Electrochemical Corrosion and Erosion Wear behavior of FeAlCr Intermetallic Coatings Deposited by Detonation Spray Technology</b></p> <p><i>D Vijaya Lakshmi, P Suresh Babu, S B Chandrashekar, R Vijay and L Rama Krishna, ARCI, Hyderabad</i></p>

17:45 – 18:00	<b>CL-10: Effect of Powder Feed Rate on Weld Bead Characteristics and Dilution of Colmonoy 6 Hardfacings deposited on 304 SS by PTAW</b> <i>S.P. Wanare and V.D. Kalyankar, SVNIT Surat</i>	<b>CL-13: One Step Electrodeposition Method for Superhydrophobic Coating on 304L SS</b> <i>Rasitha T.P.<sup>1,2</sup>, S.C. Vanithakumari<sup>1</sup>, R.P. George<sup>1</sup> and John Philip<sup>1,2</sup>, <sup>1</sup>IGCAR, Kalpakkam, <sup>2</sup>Homi Bhabha National Institute, Mumbai</i>
18.00 – 19.00	<b>Visit to Poster Session (P21-P40) &amp; Exhibition</b>	
19.00 – 21.00	<b>DINNER</b>	

<b>Day 3: 7<sup>th</sup> March, 2020 (Saturday)</b>		
09:00– 11:00	<b>Keynote Session- 5</b> <b>Session Chair:</b> Prof. Christopher Berndt, Swinburne University of Technology, Australia	
09:00– 09:30 KL14	<b>Dual Frequency induction heating systems for stress relieving applications &amp; and introducing some advances in induction packages</b> <i>Mr. Fabien Marquis, GH Induction, Spain</i>	
09:30– 10:00 KL15	<b>Thermochemical Surface Engineering of Stainless Steels with Interstitials: Symbiosis of Science, Technology and Innovation</b> <i>Prof. Marcel A.J. Somers, Technical University of Denmark</i>	
10:00– 10:30 KL16	<b>Challenges and Benefits of ‘Thru-process’ Temperature Profiling in the Heat Treatment Industry</b> <i>Dr. Jason Dervish, Phoenix TM Ltd., UK</i>	
<b>10:30–10:45</b>	<b>TEA BREAK</b>	
	<b>HALL – A</b>	<b>HALL - B</b>
	<b>Technical Session 5A</b> <b>Session Chair:</b> Dr. Ramesh Raghavendra, Waterford Institute of Technology, Ireland	<b>Technical Session 5B</b> <b>Session Chair:</b> Prof. Shrikant Joshi, University West, Sweden
10:45– 11:00	<b>IL-40: Abrasive and Erosive Wear Behaviour of Nitrogen Stainless Steel</b> <i>J.K.N. Murthy<sup>1</sup>, B. Bhav Singh<sup>1</sup>, B. Venkataraman<sup>1</sup>, V. Madhu<sup>1</sup> and R. Arockia Kumar<sup>2</sup>, <sup>1</sup>DMRL, Hyderabad, <sup>2</sup>NIT Warangal</i>	<b>IL-45: Effect of Laser Shock Peening on the structural and mechanical properties of Ni-Ti Shape Memory Alloy</b> <i>T. Rajesh Dora<sup>1,5</sup>, P. Subramaniyan<sup>2</sup>, S. Kalainathan<sup>2</sup>, E. Maran<sup>3</sup>, S. Anand Kumar<sup>4</sup>, H. Ravi Shankar<sup>5</sup>, P. S. De<sup>1</sup>, R. Jha<sup>1</sup> and S. Gollapudi<sup>1</sup>, <sup>1</sup>IIT Bhubaneswar, <sup>2</sup>VIT Vellore, <sup>3</sup>IIT Madras, <sup>4</sup>IIT Jammu, <sup>5</sup>GITAM, Visakhapatnam.</i>
11:00– 11:15	<b>IL-41: Failure of a Furling Mast of a 42 foot Boat Due to Lack of Heat Treatment</b> <i>Erhan Ulva, Acuren Group Inc, Canada</i>	<b>IL-46: Electrical assisted forming of aluminium alloys</b> <i>K. Hariharan, S.K. Panigrahi and Murugaiyan A., IIT Madras</i>

11:15– 11:30	<p><b>IL-42: Investigating the friction and wear properties of micro surface-textured steel under critical lubrication regime</b></p> <p><i>Shubrajit Bhaumik<sup>1</sup>, Dhruvajyoti Chowdhury<sup>1</sup>, Adarsh Batham<sup>1</sup>, Udit Sehgal<sup>1</sup>, Chiradeep Ghosh<sup>2</sup>, Basudev Bhattacharya<sup>2</sup> and Shubhabrata Datta<sup>1</sup>, <sup>1</sup>SRMIST, Kattankulathur, <sup>2</sup>Tata Steel, Jamshedpur</i></p>	<p><b>IL-47: Influence of Chemistry, Process and Heat-treatment Parameters on Properties of Industrial Aluminum Alloy Components: A Critical Review</b></p> <p><i>M. Jagannatham, K. Anand, S. Manimekala, M. Monisha, S.A. Vimalathithan, and T. Sundararajan, Wheels India Pvt. Ltd., Chennai</i></p>
11:30– 11:45	<p><b>IL-43: Optimizing Heat Treating Specifications for Medium Technology Applications Economy and Durability</b></p> <p><i>Debbie Aliya, Aliya Analytical, USA</i></p>	<p><b>IL-48: Synergetic effect of thermal treatment and thermo-mechanical processing on the structural properties of an Al-Si-Mg alloy – A metallurgical investigation</b></p> <p><i>R.J. Immanuel<sup>1</sup> and S.K. Panigrahi<sup>2</sup>; <sup>1</sup>IIT Bhilai, <sup>2</sup>IIT Madras</i></p>
11:45– 12:00	<p><b>IL-44: Tribotesting: enabling materials innovation for challenging applications</b></p> <p><i>Debdutt Patro<sup>1</sup>, Sravan Josyula<sup>1</sup>, Harish Prasanna<sup>1</sup>, Fabio Alemano<sup>2</sup>, Angela Tortora<sup>2</sup> and Deepak Halenahally Veeregowda<sup>2</sup>, <sup>1</sup>Ducom Instruments, India, <sup>2</sup>Ducom Instruments, Europe</i></p>	<p><b>IL-49: Investigations on selective laser nitriding of A356 Al alloy for improving its wear behavior</b></p> <p><i>Kulkarni Achyuth Rao<sup>1</sup>, Manikandan M<sup>1</sup>, Ashish K. Shukla<sup>1</sup>, Shanmugam Subramaniam<sup>2</sup>, Balaji V. P.<sup>2</sup>, I.A. Palani<sup>1</sup> and M. Jayaprakash<sup>1</sup>, <sup>1</sup>IIT Indore, <sup>2</sup>WABCO India Pvt. Ltd.</i></p>
12:00– 12:15	<p><b>CL-14: Wear Characteristics Study on PTFE And Peek Coatings in AISI 1040 Steel</b></p> <p><i>S. Karthi, S. Shanmugam and V.P. Balaji, WABCO India Pvt LTD, Chennai</i></p>	<p><b>IL-50: Development of surface pretreatments to increase corrosion resistance of AZ91 magnesium alloy</b></p> <p><i>Charu Singh, S.K. Tiwari and Raghuvir Singh, CSIR-National Metallurgical Laboratory, Jamshedpur</i></p>
12:15– 12:30	<p><b>CL-15: Multi length Scale Tribology of Cr<sub>3</sub>C<sub>2</sub> Reinforced Tribaloy T-400</b></p> <p><i>Moumita Mistri<sup>1</sup>, Shrikant Joshi<sup>2</sup>, Kamal K Kar<sup>1</sup> and Kantesh Balani<sup>1</sup>, <sup>1</sup>IIT Kanpur, <sup>2</sup>University West, Sweden</i></p>	<p><b>CL-16: Evolution of microstructure of 6xxx billets during homogenization</b></p> <p><i>Sumit Kumar Gahlyan, Vivek Srivastava and Pankaj Wanjari, HINDALCO, Mumbai</i></p>
<b>12:30 -13:30</b>	<b>LUNCH</b>	



	<b>Technical Session 6A</b> <b>Session Chair:</b> Prof. Massimo Pellizzari – University of Trento, Italy	<b>Technical Session 6B</b> <b>Session Chair:</b> Prof. Marcel AJ Somers, Technical University of Denmark, Denmark
13:30– 13:45	<b>IL-51: Corrosion Behavior of Some Post-Plasma-Spraying Gas Nitrided Metallic Coatings on ASTM-SA210 Grade A-1 Boiler Steel at High Temperature</b> <i>Vikas Chawla, I.K. Gujral Punjab Technical University, Kapurthala</i>	<b>IL-54: Effects of Rare earth oxide doping on hot corrosion behaviour of detonation-gun-sprayed NiCrAlY coating on superalloys in sulfate and potassium containing environment at 900°C</b> <i>Subhash Kamal<sup>1</sup>, S. R. Pedapati<sup>2</sup> and A.M. Abdul-Rani<sup>2</sup>, <sup>1</sup>Geethanjali College of Engg. and Technology, Hyderabad, <sup>2</sup>Universiti Teknologi PETRONAS, Malaysia</i>
13:45– 14:00	<b>IL-52: Second advice: how failure analysis of metallic components can bring very different results when carried out by different labs, while it should not</b> <i>Véronique Vitry, Victor Ioan Stanciu and Fabienne Delaunois, Université de Mons, Belgium</i>	<b>IL-55: Microstructure property relationship of UHSS steel - EN 10149-2-S700MC</b> <i>Pradip K Patra<sup>1</sup> and Ashok Kumar Srivastava<sup>2</sup>, <sup>1</sup>JSW Steel Dolvi Works, Mumbai, <sup>2</sup>OP Jindal University, Raigarh</i>
14:00– 14:15	<b>IL-53: Latest trends and Developments in quenching technology</b> <i>Atul Kamble, Hardcastle Petrofer Pvt. Ltd., Pune</i>	<b>CL-21: Fiber metal Laminates for the subsea housing applications</b> <i>Thirunavukkarasu A, Velamurali and Latha G, National Institute of Ocean Technology, Chennai</i>
14:15– 14:30	<b>CL-17: Benefits for Heat Treatment and Surface Engg plants by implementing IATF 16949 and CQI requirements</b> <i>C.N. Prasannakumar, Nathan &amp; Nathan Consultants Pvt. Ltd., Chennai</i>	<b>CL-22: Influence of E-waste on the Mechanical Characterization of hemp fiber Epoxy Composite</b> <i>Quberk Jeeva Singh C, Rajamurugan G and Prabu Krishnasamy, VIT Vellore</i>
14:30–14:45	<b>CL-18: Failure analysis of boiler hairpin of Rajasthan Atomic Power Station-2</b> <i>Raman Saini, Suraj Kumar, Nitin Kumawat, B.N. Rath, Akanksha Samanta and J.L. Singh, Bhabha Atomic Research Centre, Mumbai</i>	<b>CL-23: Microstructure, Phase Characterization and oxidation Kinetics of CVD grown Pyrolytic Graphite Coatings</b> <i>E. Vetrivendan<sup>1,2</sup>, Hareesh Rongali<sup>1,2</sup>, Ravikumar Sole<sup>1</sup> and S. Ningshen<sup>1,2</sup>, <sup>1</sup>IGCAR, Kalpakkam, <sup>2</sup>Homi Bhabha National Institute, Mumbai</i>

14:45– 15:00	<b>CL-19: Low pressure carburising and high-pressure gas quenching technology in manufacturing</b> <i>Prashant Jadhav, ECM Furnaces India Pvt. Ltd., Pune</i>	<b>CL-24: Scaled Down Ballistic Tests using a Long Rod Penetrator with Two Stage Gas Gun</b> <i>Rajnish Goyal and B. Venkataraman, DMRL, Hyderabad</i>
15:00 –15:15	<b>CL-20: Comparative DC Electrochemical and Hot Corrosion performance of Thermal spray coatings for AUSC Boiler Applications</b> <i>C. Sundaresan<sup>1</sup>, A. Jyothirmayi<sup>2</sup>, B. Rajasekharan<sup>1</sup> and G. Sivakumar<sup>2</sup>, <sup>1</sup>NIT Surathkal. <sup>2</sup>ARCI, Hyderabad</i>	<b>CL-25: Effect of Temperature and Environment on Oxidation of 304HCU Stainless Steel</b> <i>M. Archana<sup>1,2</sup>, Ch. Jagadeeswara Rao<sup>1,2</sup>, S. Ningshen<sup>1,2</sup> and John Philip<sup>1,2</sup>, <sup>1</sup>IGCAR, Kalpakkam, <sup>2</sup>Homi Bhabha National Institute University, Mumbai</i>
<b>15:15–16:15</b>	<b>VALEDICTORY FUNCTION</b>	
<b>16:15– 16.45</b>	<b>HIGH TEA- GOOD BYE!</b>	

**KL- Keynote Lecture; IL- Invited Lecture; CL-Contributory Lecture; P-Poster**

Poster Code	Poster Details
<b>P01</b>	<b>Corrosion behavior of boronized 13Cr-4Ni martensitic stainless steels</b> <i>Nirupama Mohan and G.P. Chaudhari, IIT Roorkee</i>
<b>P02</b>	<b>In-vitro biocompatibility and corrosion resistance of electrochemically assembled PPy/TNTA hybrid material for biomedical applications</b> <i>V. Sudhisha, V.S. Simi and N. Rajendran, Anna University</i>
<b>P03</b>	<b>Use of Direct Metal Laser Sintering and Spark Plasma Sintering Techniques to Facilitate Joining of Steel and Titanium</b> <i>N.S.M. Akhil, K. Sri Harsha, N. Naveen Kumar and D. Hemanth, Vignan's Institute of Information Technology, Visakhapatnam</i>
<b>P04</b>	<b>Optimizing Cold Spray Process Parameter to Attain Minimum Porosity and Maximum Hardness in Metal Matrix Composite Coatings on AZ31b Magnesium Alloy by Response Surface Methodology</b> <i>M. Ashokkumar and D. Thirumalaikumarasamy, Government College of Engineering, Bargur</i>
<b>P05</b>	<b>A Couple Thermo-Mechanical model based on Coupled Eulerian Lagrangian to simulate Friction Stir Welding to predict forces and defect formation</b> <i>Atul Kumar Choudhary and Rahul Jain, IIT Bhilai</i>
<b>P06</b>	<b>Double Re-austenitization and Tempering Based Post Weld Heat Treatment Cycle for P91 Steel Welded Joint.</b> <i>N. M. Pandya and V. D. Kalyankar, SVNIT, Surat</i>

<b>P07</b>	<b>Engineering Initial Microstructure by Pre-Heat Treatment for Enhanced Rollability of ZK60 (Mg-Zn-Zr based) Magnesium Alloy</b> <i>Rakesh Kumar and S K Panigrahi, IIT Madras</i>
<b>P08</b>	<b>Experimental Investigation of Microstructure-induced Strain Hardening Characteristics of 17-4 PH Stainless Steel</b> <i>Athul Sathyanath and Anil Meena, IIT Madras</i>
<b>P09</b>	<b>Investigation of the microstructure induced cutting forces during high-speed machining of Ti6Al4V</b> <i>Shiv Sharma and Anil Meena, IIT Madras</i>
<b>P10</b>	<b>Influence of age hardening heat treatment on mechanical behavior of in-situ sub-micron sized TiB<sub>2</sub> reinforced ZE41 magnesium matrix composite</b> <i>Sushanta Kumar Sahoo and S K Panigrahi, IIT Madras</i>
<b>P11</b>	<b>Study on Diamond Like Carbon Coatings on Nitinol by Thermal Chemical Vapor Deposition</b> <i>J. B. Rajashri and A. Siddharthan, MIT Campus, Anna University, Chennai</i>
<b>P12</b>	<b>Establishment of a novel cold-welding technique to develop aluminum-copper bimetals using a combination of severe plastic deformation and heat treatment</b> <i>B. Prathyusha, A. Dhal and S.K. Panigrahi, IIT Madras</i>
<b>P13</b>	<b>Influence of heat treatment on microstructural evolution and mechanical properties of cryorolled AA6063/SiC nano composite</b> <i>Omkar Bembalge and S K Panigrahi, IIT Madras</i>
<b>P14</b>	<b>Metallurgical developments in the weld pool during cladding: A Review</b> <i>A.R. Bhoskar and V.D. Kalyankar, SVNIT, Surat</i>
<b>P15</b>	<b>Numerical and Experimental investigation of the ductile damage model for failure prediction in Incremental sheet metal forming</b> <i>Sahil Bharti, Aishwary Gupta, K. Hariharan and S.K. Panigrahi, IIT Madras</i>
<b>P16</b>	<b>Effect of dry sliding wear test parameters on wear behaviour and wear mechanisms of plasma sprayed stellite coatings on AZ91D magnesium alloy</b> <i>Mathivanan and D.Thirumalaikumarasamy, Government College of Engineering, Bargur</i>
<b>P17</b>	<b>Nitridation and Hydrogen reduction of Fe-2.3wt.% Al alloy powder</b> <i>Akeshwar Singh Yadav<sup>1</sup>, Philipp Kürnsteiner<sup>2</sup>, Eric A. Jägler<sup>2</sup> and Sai Ramudu Meka<sup>1</sup>, <sup>1</sup>IIT Roorkee, <sup>2</sup>Max-Planck-Institut für Eisenforschung, Germany</i>
<b>P18</b>	<b>Effect of Nickel-Based Cermet Coatings on Slurry Erosion Resistance of Monel K-500 Alloy</b> <i>Navneet K. Singh<sup>1</sup>, Andrew S.M. Ang<sup>2</sup>, Christopher C. Berndt<sup>2</sup>, Dhiraj K. Mahajan<sup>1</sup> and Harpreet Singh<sup>1</sup>, <sup>1</sup>IIT Ropar, <sup>2</sup>Swinburne University of Technology, Melbourne, Australia</i>
<b>P19</b>	<b>An Overview on Oxidation, Hot Corrosion and Erosion Wear Behaviour of Welded Joints and its Prevention</b> <i>Prashant Pandey and S.B. Mishra, MNIT Allahabad, Prayagraj</i>

<b>P20</b>	<b>Electrochemical Corrosion Performance of Plasma Sprayed Titania Coated Coatings On Magnesium Alloy Under Sodium Chloride Environment</b> <i>Daniel C Ribu<sup>1</sup>, R. Rajesh<sup>2</sup>, D. Thirumalaikumarasamy<sup>3</sup> and M. Ashokkumar<sup>3</sup>, <sup>1</sup>Lourdes matha college of science and technology, <sup>2</sup>Rohini College of Engineering &amp; Technology, Anjugramam, <sup>3</sup>Government College of Engineering, Bargur</i>
<b>P21</b>	<b>An Overview on the Erosion Wear Behaviour of Microwave Cladding</b> <i>Manavendra Mishra, D. K. Shukla and S.B. Mishra, MNIT Allahabad, Prayagraj</i>
<b>P22</b>	<b>Electrochemical behavior of silicate anodizing AZ31 Magnesium alloy</b> <i>M. Kalaiyaran and N. Rajendran, Anna University, Chennai</i>
<b>P23</b>	<b>High nitrogen AISI 316L stainless steel produced by powder salt-bath nitriding and consolidation by spark plasma sintering Low temperature surface hardening of stainless steels</b> <i>Amuth Qadri and S.R. Meka, IIT Roorkee</i>
<b>P24</b>	<b>Experimental and Numerical investigation of Residual stress in Swaged and Annealed Zirconium alloys</b> <i>Gaurav Singh<sup>1</sup>, Bijit Kalita<sup>1</sup>, Vishnu Narayanan K P<sup>2</sup>, Umesh Kumar Arora<sup>2</sup>, R. Jayaganthan<sup>1</sup> and Dinesh Srivastava<sup>2</sup>, <sup>1</sup>IIT Madras, <sup>2</sup>Nuclear Fuel Complex, Hyderabad</i>
<b>P25</b>	<b>Effect of anodized Mg degradation products on osteogenesis and anti-bacterial behavior</b> <i>Saranya K. and N. Rajendran, Anna University, Chennai</i>
<b>P26</b>	<b>Influence of polyaniline coating on corrosion behavior of titania nanotubes for orthopedic applications</b> <i>Agilan P. and N. Rajendran, Anna University, Chennai</i>
<b>P27</b>	<b>Mechanistic Investigations on Cobalt Dissolution in Glycine for Chemical Mechanical Planarization Applications</b> <i>Twinkle Paul and S. Ramanathan, IIT Madras</i>
<b>P28</b>	<b>Studies on Hydrogen Evolution Reaction Using Inverted Rotating Disc Electrode</b> <i>Saibi R, Ranjith Punathil Meethal and Ramanathan Srinivasan, IIT Madras</i>
<b>P29</b>	<b>Physical and mathematical simulation of contact resistance generation during resistance welding of hot stamping steel</b> <i>Mohamed Haris, Prakash S. and Murugaiyan Amirthalingam, IIT Madras</i>
<b>P30</b>	<b>Reducing the effect of micro spark in Electrochemical Micromachining of Molybdenum using cryogenically treated pencil graphite cathode</b> <i>N. Pradeep, K. Shanmuga Sundaram and M. Pradeep Kumar, Anna University, Chennai</i>
<b>P31</b>	<b>Physical and Mechanical Properties of Almond shell powder and glass fiber reinforced polyester composite</b> <i>Pradyumn K. Arya, N.K. Jain and Jayaprakash Murugesan, IIT Indore</i>
<b>P32</b>	<b>Design and Fabrication Of 3D Printed Scaffold for Lung Tumour Treatment</b> <i>Sri Rathinamani Ramdoss, Muthukani Pooja Kathiresan, M. Pradeep Kumar and K. Shanmuga Sundaram, Anna University, Chennai</i>

<b>P33</b>	<b>Nanoindentation and Tribological Behavior of Borohydride Reduced Electroless Coatings</b> <i>Vaibhav Nemane and Satyajit Chatterjee, IIT Indore</i>
<b>P34</b>	<b>Influence of post treatment on microstructural behaviour of HVOF sprayed Co-based alloy coating developed on Inconel 718</b> <i>Aveek Mohanty and S.K. Panigrahi, IIT Madras</i>
<b>P35</b>	<b>Influence of Continuous Laser-assisted Texturing on Cutting Forces of Single Point Cutting Tool</b> <i>Balaji Nanda K.<sup>1</sup>, Ashish K. Shukla<sup>1</sup>, I. A. Palani<sup>1</sup> and K. Subbu<sup>2</sup>, <sup>1</sup>IIT Indore, <sup>2</sup>IIT Palakkad</i>
<b>P36</b>	<b>Additive manufacturing of steels for tooling applications</b> <i>Niyanth Sridharan, Sougata Roy, Benjamin Shassere, Andrzej Nycz, Mark Noakes and Badri Narayanan, Lincoln Electric</i>
<b>P37</b>	<b>Process Optimization in Induction Hardening of Transmission Parts</b> <i>Rajasekar Ganesan and Shankar Subburathinam, Caterpillar India</i>
<b>P38</b>	<b>Improvement in Tensile Strength of Friction Stir Welded AA7075 Alloy by Double Sided Friction Stir Welding</b> <i>Satya K. Dewangan, Manwendra K. Tripathi and Manoranjan K. Manoj, NIT Raipur</i>
<b>P39</b>	<b>Electrochemical Investigations of Corrosion Behaviour Of Metal Doped Hydroxyapatite Coatings on Orthopaedic Implants</b> <i>K. Aruna<sup>1</sup>, J. Manovasuki<sup>1</sup>, H. Usharani<sup>1</sup>, K.M. Veerabadran<sup>2</sup> and T. M. Sridhar<sup>2</sup>, <sup>1</sup>University of Madras, Guindy Campus, Chennai, <sup>2</sup>Madras Institute of Technology, Anna University, Chennai</i>
<b>P40</b>	<b>Synthesis and Characterization of La<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> Nanomaterials by Co-Precipitation Method for Thermal Barrier Coatings</b> <i>G. Bhavesh<sup>1</sup>, P. Deepak<sup>2</sup>, D. Durgalakshmi<sup>1</sup> and P. Hariharan<sup>1</sup>, <sup>1</sup>Anna University, Chennai, <sup>2</sup>University of Madras, Chennai</i>
<b>P41</b>	<b>Enhancing Corrosion Resistance and Cells Proliferation with Osteocompatible Nano Triphasic Bioceramic Coatings</b> <i>R. Manonmani<sup>1</sup>, K.M. Veerabadran<sup>2</sup>, V. Balasubramani<sup>3</sup> and T.M. Sridhar<sup>3</sup>, <sup>1</sup>Rajalakshmi Engineering College, Chennai, <sup>2</sup>Madras Institute of Technology, Anna University, Chennai, <sup>3</sup>University of Madras, Guindy Campus, Chennai</i>
<b>P42</b>	<b>Influence of Citric acid and tartaric acids on Nano Duplex coatings on 316L SS in Artificial saliva</b> <i>S. Mohandoss<sup>1</sup>, M. Sundara Ganesan<sup>2</sup>, V. Balasubramani<sup>2</sup> and T.M. Sridhar<sup>2</sup>, <sup>1</sup>Rajalakshmi Engineering College, Chennai, <sup>2</sup>University of Madras, Guindy Campus, Chennai</i>
<b>P43</b>	<b>Enhancing the Inter-Yarn Friction Properties of Woven Glass and Kevlar Fabrics using ZnO Nanowires</b> <i>Dileep R. Sekar and S. Gowthaman, IIITDM Kancheepuram</i>