

# 47<sup>th</sup> National Metallurgists' Day Celebration

International Symposium on  
Emerging Challenges for Metals and Materials:  
Engineering and Technology

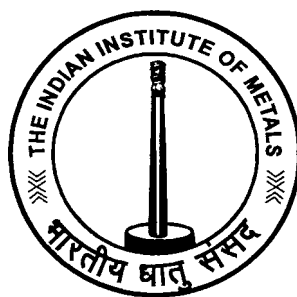
63<sup>rd</sup> Annual Technical Meeting

of

*The Indian Institute of Metals*

14<sup>th</sup> to 17<sup>th</sup> November, 2009; Science City, Kolkata

## PROGRAMME AT A GLANCE



Organised by

THE INDIAN INSTITUTE OF METALS  
KHARAGPUR, BESU AND KOLKATA CHAPTERS

In association with

BURNPUR, BOKARO, BHUBANESWAR, DURGAPUR, GHATSILA,  
ICHAPUR, JAMSHEDPUR AND RANCHI CHAPTERS

47<sup>th</sup> NATIONAL METALLURGISTS' DAY CELEBRATION  
Ministry of Steel, Government of India

VENUE: Science City Auditorium, Science City Complex, Kolkata.  
Saturday, November 14, 2009

INAUGURAL SESSION PROGRAMME

**NMD AWARDS PRESENTATION**

09:00 – 09:05 Hrs.	Inviting Dignitaries to Dias	
09:05 – 09:10 Hrs	Invocation song in glory of Almighty	Shri Apurba Choudhuri
09:10 – 09:15 Hrs	Welcome by	Dr Dipankar Banerjee, Vice President, IIM
09:15- 09: 20 Hrs.	Lighting of Inaugural Lamp	
09:20 – 09.35 Hrs	Presidential Address by	Dr Sanak Mishra, President IIM.
09:35 – 09:50 Hrs	Address by Guest of Honour	Shri Atul Chaturvedi Secretary, Ministry of Steel, Govt. of India
9:50 – 10: 15 Hrs	Inaugural Address by Chief Guest & Release of NMD Souvenir	Shri Virbhadra Singh Hon'ble Minister of Steel, Govt. of India
10:15 – 10:45 Hrs	Presentation of NMD Awards	<u>Announcement:</u> Shri J C Marwah, Secy General, IIM <u>Presentation:</u> Shri Virbhadra Singh Hon'ble Minister of Steel, Govt. of India

**IIM - JRD TATA AWARD PRESENTATION**

10:45 -- 11: 00 Hrs	Presentation of IIM JRD Tata Award	<u>Introduction</u> Dr Sanak Mishra, President IIM. <u>Citation</u> Shri J C Marwah, Secy General, IIM <u>Presentation:</u> Shri Virbhadra Singh Hon'ble Minister of Steel, Govt of India
11:00 - 11:05 Hrs	Presentation of Mementos by	Prof S Chatterjee, Convenor, NMD-ATM 2009
11:05- 11 :10 Hrs	Vote of Thanks	Dr D DeSarkar, Jt Hon Secy & Hon Treasurer, IIM

**EXHIBITION INAUGURATION**

11:10 Hrs	Inauguration of Metals, Minerals, Manufacturing Expo 2009	By Shri Virbhadra Singh Hon'ble Minister of Steel, Govt. of India
11:10 – 11 :30 Hrs	TEA / COFFEE BREAK	

**IIM AWARDS PRESENTATION**

11: 30 – 11: 35 Hrs	Presentation of IIM Quality Awards	<u>Announcement:</u> Shri J C Marwah, Secy General, IIM <u>Presentation:</u> Dr Sanak Mishra, President IIM
11:35 –12:05 Hrs	Presentation of IIM Awards	<u>Announcement:</u> Dr D De Sarkar, Jt Hon. Secy & Hon Treasurer, IIM <u>Presentation:</u> Dr Sanak Mishra, President IIM
12:05 - 12:10 Hrs	Vote of Thanks	Prof S Chatterjee, Convenor, NMD-ATM 2009

**INDUSTRY LEADERS FORUM**

12:15 – 13: 30 Hrs	A Panel Discussion on 'Which Way is the Metals Industry in India Heading'	
13:30 – 14.30 Hrs	Lunch Break	

# The Indian Institute of Metals

NMD – ATM 2009 Kolkata

## Post Lunch Session - Saturday, 14 November, 2009

**VENUE: Science City Auditorium, Science City Complex, Kolkata**

14:30 – 14: 55 Hrs	<b>Prof. N. P Gandhi Memorial Lecture by</b>	<b>Prof .K Chattopadhyay</b> Dept of Materials Engg, IISc. Bangalore
	<u>Session Chairman</u> <b>Dr Dipankar Banerjee</b> Vice President IIM	
14: 55 – 15:20Hrs	<b>G D Birla Gold Medal Lecture by</b>	<b>Prof Dipak Mazumdar</b> Prof, Dept of MME, IIT Kanpur
	<u>Session Chairman</u> <b>Shri H M Nerurkar</b> Vice President IIM	
15: 20 – 16: 30 Hrs	<b>Presentation by Sponsors:</b>	
	<ul style="list-style-type: none"><li>• Arcelor Mittal</li><li>• SAIL</li><li>• SMS- Seimag</li><li>• Tata Steel</li> <li>• JSPL</li> <li>• Dasturco</li><li>• Siemens VAI</li></ul>	
16:30 – 17. 30 Hrs	<b>Tea / Coffee Break</b>	
17:30 – 19: 00 Hrs	<b>Cultural Programme at Science City Auditorium</b>	Transport from Science City Complex to Tollygunge Club leaves at 19:15 hrs, travelling distance about 45 minuets
20.00 –22 :00 Hrs	<b>Dinner at Tollygunge Club</b>	Transport from Tollygunge Club for select destinations starts leaving at 21:30 hrs.

**International Symposium on**  
**"Emerging Challenges for Metals and Materials: Engineering and Technology"**

November 15, 2009, Science City, Kolkata

<b>PROGRAMME</b>
------------------

9:00 - 9:40:	Inaugural Program Welcome address by	Dr Debashish Bhattacharjee <i>Convenor, International Symposium [Director RD&amp;T, Tata Steel Group]</i>  Dr. Sanak Mishra <i>President, Indian Institute of Metals and Chairman, International Symposium [CEO, Greenfield Projects India, ArcelorMittal India Ltd.]</i>  Dr. Brajendra Mishra (TMS)
	DVD presentation	Message from President, TMS (Ray D. Peterson): Dr. Brajendra Mishra  Dr. C. Ravindran (ASM)
	Release of conference volume by	Dr. Sanak Mishra
	Release of book by	(Editor: Dr. Baldev Raj)
9:40 - 10:10: Key Note Lecture:	Materials Challenges in Nuclear Energy Programmes by Dr. Srikumar Banerjee, Past President of IIM and Director, BARC	

<b>10:10 - 11:15: Technical Session I:</b>
--

Session Chairman: Mr. Vijay Bhatnagar, *India CEO of ArcelorMittal*

<b>Speakers</b>	<b>Affiliation</b>	<b>Topic</b>
Mr. Pierre Gugliemina	Chief Technology Officer, ArcelorMittal	CO <sub>2</sub> Breakthrough Technologies in Steel Industry
Dr. C. Ravindran	Centre for Near-net-shape Processing of Materials, Ryerson University	Unique Challenges in Casting Magnesium Alloys
Prof. Dong Han	Central Iron and Research Institute, Beijing, China	The Recent Scenario of the Chinese Steel Industry and Steel Product Technologies

**11:15 - 11:30: Tea Break**

**11:30 - 13:00: Technical Session II:**Session Chairman: Dr. Baldev Raj, *Past President of IIM and Director of IGCAR*

<b>Speakers</b>	<b>Affiliation</b>	<b>Topic</b>
Prof. David K Matlock	Advanced Steel Processing and Products Research Centre, CSM, USA	Recent Advances Leading to Improved Fatigue Performance of Automotive Steels
Prof. Wolfgang Bleck	IEHK, RWTH Aachen University, Germany	Status of High Performance Automotive Steels
Prof. Hu-Chul Lee	Seoul National University, Seoul, Republic of Korea	Challenges and Achievements of the Steel Industry in South Korea in the Past 10 Years
Prof. K. A. Padmanabhan	Institute of Materials Physics, University of Muenster, Germany	Increasing Severity of Deformation and Decreasing Forming Forces for Greener Technology

**13:00 - 14:00: Lunch Break****14:00 - 15:30: Technical Session III:**Session Chairman: Prof. Vikram Jayaram, *Chairman of Department of Materials Engineering, IISc Bangalore*

<b>Speakers</b>	<b>Affiliation</b>	<b>Topic</b>
Prof. Rob Boom	CORUS RD&T, Ijmuiden, The Netherlands	State of the Art of Modelling Ironmaking and Steelmaking Processes
Prof. Chengjia Shang	University of Science and Technology, Beijing, China	Development of High Performance Structural Plate Steels by China in the Last 10 Years
Prof. Kazuhiro Hono	National Institute for Materials Science, Japan	Towards Higher Performance Permanent Magnets for Automotive Applications
Dr. John Allison	Ford Research and Advanced Engineering Ford Motor Company Dearborn, USA	Integrated Computational Materials Engineering

**15.30 - 15.45: Tea Break****15:45 - 17:15: Technical Session IV:**Session Chairman: Dr. Dipankar Banerjee, *Chief Controller of R&D (DRDO) and current Vice President of IIM*

<b>Speakers</b>	<b>Affiliation</b>	<b>Topic</b>
Prof. Herbert Gleiter	Institute of Nanotechnology, Research Centre, Karlsruhe, Germany	Intelligent Nanomaterials
Dr. Robert D Shull	National Institute of Standards and Technology, Gaithersburg	The Age of New Magnetic Materials: An Effect of Nanotechnology
Prof. J. Mazumder	University of Michigan, USA	Challenges and Promise of Laser Materials Processing
Prof. Brajendra Mishra	Metallurgical and Materials Engineering, CSM, USA	Advances in Magnetron Sputtering for Superior Surface Engineering

**Vote of Thanks**

## STRUCTURE OF ATM 2009 (SYMPOSIA AND SESSIONS)

## DAY I

NOVEMBER 16, 2009 (MONDAY)

	Symposium A C V Sundaram Memorial Symposium on Extractive Metallurgy	Symposium B Placid Rodriguez Memorial Symposium on Materials Processing	Symposium C T R Anantharaman Memorial Symposium on Structure- Property Correlation	Symposium D Advanced and Strategic Materials Technology	Symposium E Materials Degradation and Environmental Issues
Forenoon	8.45 am to 10.45 am	A.I.1: Mineral Beneficiation and Agglomeration	B.I.1: Casting and Solidification Technology	C.I.1: Metastable Microstructure	E.I.1: Surface Engineering I
	<b>Tea BREAK (10.45 Am to 11.00 Am)</b>				
	11.00 am to 1.00 pm	A.I.2: Iron Making Technology	B.I.2: Deformation Processing of Materials	C.I.2: Phase Transformation I	E.I.2: Surface Engineering II
	<b>LUNCH BREAK (1.00 pm to 2.00 pm)</b>				
	<b>GRAND POSTER AND METALLOGRAPHY SESSION FOR ALL SYMPOSIA Including POSTER COMPETITION FOR UG+PG STUDENTS</b>				
Afternoon	2.00 pm to 3.00 pm				
	3.00 pm to 4.00 pm	STUDENT SESSION A	STUDENT SESSION B	STUDENT SESSION C	VISIT TO METALLOGRAPHY SESSION
	<b>Tea BREAK (4.00 Pm to 4.15 Pm)</b>				
	4.15 pm to 6.15 pm	A.I.3: Alternative Routes of Iron Making	B.I.3: Creep, Failure Analysis and Evaluation	C.I.3: Phase Transformation II	D.I.3: Nanostructured Materials and Nanotechnology
					E.I.3: Environment and Management

**DAY II**  
**NOVEMBER 17, 2009 (TUESDAY)**

	<b>Symposium A</b> <b>C V Sundaram</b> <b>Memorial</b> <b>Symposium on</b> <b>Extractive</b> <b>Metallurgy</b>	<b>Symposium B</b> <b>Placid Rodriguez</b> <b>Memorial</b> <b>Symposium on</b> <b>Materials</b> <b>Processing</b>	<b>Symposium C</b> <b>T R Anantharaman</b> <b>Memorial</b> <b>Symposium on</b> <b>Structure-</b> <b>Property</b> <b>Correlation</b>	<b>Symposium D</b> <b>Advanced and</b> <b>Strategic</b> <b>Materials</b> <b>Technology</b>	<b>Symposium E</b> <b>Materials</b> <b>Degradation</b> <b>and Environmental</b> <b>Issues</b>
	A.II.1: Non-ferrous Extractive Metallurgy	B.II.1: Conventional and Advanced Joining Processes	C.II.1: Texture Evolution	D.II.1: Composite and Bio Materials I	E.II.1: Environmental Degradation I
<b>Forenoon</b>	<b>Tea Break (10.45 Am to 11.00 Am)</b>				
	A.II.2: Steel Making I	B.II.2: Mathematical Modeling of Materials Processing	C.II.2: Microstructure- Mechanical Property Relation I	D.II.2: Composite and Bio Materials II	E.II.2: Environmental Degradation II
	<b>LUNCH BREAK (1.00 pm to 2.00 pm)</b>				
	A.II.3: Steel Making II	B.II.3: Fracture Mechanics	C.II.3: Microstructure- Mechanical Property Relation II	D.II.3: Ceramic, Electronic and Magnetic Materials	E.II.3: Wear of Materials
<b>Afternoon</b>	<b>TEA BREAK (4.00 PM TO 4.30 PM)</b>				
	<b>Valedictory/Concluding Session, Prize (Oral/Poster/Metallography) Distribution, Feedback in Open Forum</b>				
	<b>CONCLUSION OF ATM</b>				

## DETAILED PROGRAMME

### SYMPOSIUM A: C V SUNDARAM MEMORIAL SYMPOSIUM ON EXTRACTIVE METALLURGY

**VENUE: Hall A**  
**CONVENOR: Professor G G Roy**

**DAY 1; November 16, 2009; MONDAY**

#### SESSION A.I.1: MINERAL BENEFICATION AND AGGLOMERATION

**Schedule: 08.45 AM to 10.45 AM**

**Session Chairman: Dr. S. Banerjee (Past President, IIM)**

Session and Serial	Abstract Number	Schedule	Paper Title and Authors
		8.45 AM - 8.50 AM	Tribute to Late C. V. Sundaram by Dr. S. Banerjee
<b>Award Lectures</b>	<b>NMD-1</b>	8.50 AM - 9.05 AM	Beneficiation of Indian Coal - a Future Outlook <i>P. K. Banerjee</i>
	<b>NMD-2</b>	9.05 AM - 9.20 AM	Technological Challenges for Environmental Control in Steel Plants <i>Madhu Ranjan</i>
A.I.1.1	AL-1(G-036)	9.21 AM - 9.33 AM	A Review on the Handling of Tailings from Gold and Copper Processing Plant in Papua New Guinea. <i>Jim Pae len</i>
A.I.1.2	AL-2(G-096)	9.33 AM - 9.45 AM	Selective Separation of Albite from Quartz in Mixed Collector Systems <i>Vidyadhar, A. Das and K.K. Bhattacharya</i>
A.I.1.3	AL-3(W-094)	9.45 AM - 9.57 AM	Biomining Emerging Trends in Non-ferrous Mineral Industry <i>S. N. Bhattacharya</i>
A.I.1.4	AL-4(W-115)	9.57 AM - 10.09 AM	Innovative Reheating Practices in Non Recovery Ovens at JSW <i>S. C. Barman, Abhi Kinlekar, Pramila. B, Santosh Kumar and Manju Naik</i>
A.I.1.5	AL-5(W-129)	10.09 AM - 10.21 AM	Increasing Visibility of Sintering Process-For Controlling Process Deviation and Improve Sinter Quality <i>Tapas Chakroborty, Sulata Maharana, Adity Ganguly and Ashok Kumar</i>
A.I.1.6	AL-6(G-153)	10.21 AM - 10.33 AM	Development of Refractory Insulating Bricks from Coal Fly-ash and Bio-waste <i>R.B Gupta and G.C Patmaik</i>
A.I.1.7	AL-7(G-189)	10.33 AM - 10.45 AM	Diagnostic Models; A Novel Approach in Providing Solutions to Coke Oven Batteries <i>Unmesh Bhardwaj</i>

## SESSION A.I.2: IRON MAKING TECHNOLOGY

**Schedule: 11.00 AM to 1.00 PM**

**Session Chairman: Dr. T. K. Mukherjee (Past President, IIM)**

<b>Keynote Lecture</b>	<b>AK-1</b>	11.00 AM - 11.20 AM	Modeling of the Blast Furnace Process with a View to Optimize CO <sub>2</sub> Emissions <i>P.K.Sen</i>
A.I.2.1	AL-8(G-078)	11.20 AM - 11.32 AM	Advantages of Pulverized Coal Technology on Blast Furnace Productivity <i>C. Cortina and P. Mahowald</i>
A.I.2.2	AL-9(G-054)	11.32 AM - 11.44 AM	Various Neural Network Models for Prediction of Blast Furnace Hot Metal Silicon <i>N. Rajesh, M. R. Khare and S. K. Pabi</i>
A.I.2.3	AL-10(G-101)	11.44 AM - 11.56 AM	Environmental Impact of Select Wastes and Utilization Potential of Blast Furnace Sludge from Steel Plant <i>S.N. Tiwari, S.Bhattacharya, S. Mitra Mazumder, S. Prakash and S.K.Sinha</i>
A.I.2.4	AL-11(G-172)	11.56 AM - 12.08 PM	Blast Furnace Operation with Higher Magnesia in Slag <i>Mrunmaya K P, A Srinivas Rao, V R Sekhar and Madhu Ranjan</i>
A.I.2.5	AL-12(G-210)	12.08 PM - 12.20 PM	The New TATA Steel "H" Blast Furnace: Design Concept, Erection & Commissioning for a Record Time Project Execution <i>R. Cirelli, P. Bertossi, C. Castagnola, D. M. Shah and A. B. Das</i>
A.I.2.6	AL-13(W-068)	12.20 PM - 12.32 PM	In-situ Tracer Analysis of Metalloids Residence Time Distribution in Blast Furnace <i>K. Mukherjee, S. Prakash and S.N. Sinha</i>
A.I.2.7	AL-14(G-195)	12.32 PM - 12.44 PM	Strategy for Cost Reduction of Hot Metal at NINL <i>M Bapi Raju and Santosh Kumar</i>
A.I.2.8	AL-15(G-089)	12.44 PM - 12.56 PM	Successful Commissioning and Stabilization of Pulverised Coal Injection (pci) System at Furnace-3 & 4 of Durgapur Steel Plant <i>S.K.Dubey, S.A Balaji, S.K.Mitra, R.N.Ray and S Pramanik</i>
		12.56 PM - 01.00 PM	Concluding Remarks by the Session Chair

## SESSION A.I.3: ALTERNATIVE ROUTES OF IRON MAKING

**Schedule: 4.15 PM to 6.15 PM**

**Session Chairman: Dr. D. Mukherjee (RDCIS, Ranchi)**

<b>Keynote Lecture</b>	<b>AK-2</b>	04.15 PM - 04.35 PM	Present and Future of Alternative Ironmaking in India vis-a-vis the Rest of the World <i>Amit Chatterjee</i>
A.I.3.1	AL-16(G-232)	04.35 PM - 04.47 PM	COREX® / FINEX® Prepared for Present and Future Iron Making Challenges <i>K. Wieder, C. Böhm, U. Schmidt and W. Grill</i>
A.I.3.2	AL-17(G-169)	04.47 PM - 04.59 PM	Optimization and Selection of Coal Blend and Coke for Corex Process <i>S. C. Barman, BSL Raju, Yogish S Rao, H. Gururaj and V.R. Sekhar</i>
A.I.3.3	AL-18(G-147)	04.59 PM - 05.11 PM	Thermodynamic Modeling of Smelter Gasifier in COREX Process <i>Brijendra Srivastava, S. K. Roy, and P. K. Sen</i>
A.I.3.4	AL-19(G-107)	05.11 PM - 05.23 PM	Optimization of Coal Blends Using Linear Programming <i>Praveen Kumar Jha, S.K. Kushwaha, Sachin Kumar and S.K. Jain</i>

A.I.3.5	AL-20(G-221)	05.23 PM - 05.35 PM	Utilisation of Iron Ore Fines to Make Pig Iron by Thermal Plasma Technology <i>K.Jayasankar, P.S.Mukherjee and A.K.Chaubey</i>
A.I.3.6	AL-21(W-109)	05.35 PM - 05.47 PM	Formulation and Application of Rist Diagram Through Modelling for the Analysis and Interpretations of Mini Blast Furnace Performance <i>Partha Pratim Das and Manas Manna</i>
A.I.3.7	AL-22(G-151)	05.47 PM - 05.59 PM	Heat transfer Modeling of Packed Bed of Iron Ore-Coal Composite Pellets and Preliminary Results <i>Virendra Ramteke and G.G.Roy</i>
A.I.3.8	AL-23(G-115)	05.59 PM - 06.11 PM	Studies on Optimization of Coal Blend Composition for Rourkela Steel Plant through Pilot Oven Carbonization Tests <i>B.N. Prasad, T.K. Das, S. Tirkey, T.P. Acharyulu, D.K. Dasgupta and R.K. Vijayavergia</i>
		06.11 PM - 06.15 PM	Concluding remarks by the session chair

## DAY 2; November 17, 2009; TUESDAY

### SESSION A.II.1: NON-FERROUS EXTRACTIVE METALLURGY

**Schedule: 8.45 AM to 10.45 AM**

**Session Chairman: Dr. Pradip (TRDDC)**

<b>Keynote Lecture</b>	<b>AK-3</b>	8.45 AM - 9.05 AM	Molten Salt Electrolysis of Neodymium <i>R. Thudum, A. Srivastava, S. Nandi, A. Nagaraj and R. Shekhar</i>
A.II.1.1	AL-24(G-018)	9.05 AM - 9.17 AM	Biominerall Extraction of Uranium from Apatite Rock of Narwapahar Mines <i>Abhilash, K. D. Mehta, B. D. Pandey, L. Ray and P. K. Tamrakar</i>
A.II.1.2	AL-25(G-084)	9.17 AM - 9.29 AM	Separation of Cobalt / Nickel using Novel Solvent Octyl (Phenyl) Phosphinic Acid (OPPA) from Sulphuric Acid Medium <i>S Mondal, J N Sharma, M F Fonseca, R C Hubli and A K Suri</i>
A.II.1.3	AL-26(G-011)	9.29 AM - 9.41 AM	Extraction and Separation of Co and Zn from Chloride Leach Solution of Cobalt Cake During Processing of Poly-metallic Sea Nodules <i>B. Dhal, S. K. Sahu, B.D.Pandey and V.Kumar</i>
A.II.1.4	AL-27(H-01)	9.41 AM - 9.53 AM	A Feasibility study on the Recovery of Ti and V metal values from Red Mud for the Production of Microalloyed steels <i>S.V. Sivakumar and A.K. Chakrabarti</i>
A.II.1.5	AL-28(G-132)	9.53 AM - 10.05 AM	Electrochemical Dissolution of Chalcopyrite Mill Tailings <i>Dananjaya, P. L. N. Reddy, S. Venkatachalam and R. Mallikarjunan</i>
A.II.1.6	AL-29(W-197)	10.05 AM - 10.17 AM	The Effect of Crust Integrity on Pot Operation and Ftp Inlet Gas Temperature <i>H B Rout Ray, S Sankaran and G Oram</i>
A.II.1.7	AL-30(W-177)	10.17 AM - 10.29 AM	Studies on Adsorption of Lead by Leaching Manganese Nodules Residue <i>N.S.Randhawa, R. K. Jana, N. N. Das and K. Smita</i>
A.II.1.8	AI-31(G-274)	10.29 AM - 10.41 AM	Photocatalytic Reduction of Gold and Selenium Ions from Solutions Under Visible Light <i>J. Hait, Noor Aman, T. Mishra and R. K. Jana</i>
		10.41 AM - 10.45 AM	Concluding remarks by the session chair

## SESSION A.II.2: STEEL MAKING I

**Schedule: 11.00 AM to 1.00 PM**

**Session Chairman: Dr. S. K. Gupta (Past President, IIM)**

<b>Keynote Lecture</b>	<b>AK-4</b>	11.00 AM - 11.20 AM	The Arvedi Endless Strip Production Line (ESP) - From liquid Steel to Hot-rolled Coil in Seven Minutes <i>J. Siegl, G. Arvedi, F. Mazzolari, A. Bianchi, G. Holleis and A. Angerbauer</i>
A.II.2.1	AL-32(W-091)	11.20 AM - 11.32 AM	Dynamic Computer Simulation for Steel Plant Capital Expansion Planning at Severstal NA, Dearborn <i>Jeffery T. McGinty, Bharat Bhushan and Thomas A Obrecht</i>
A.II.2.2	AL-33(W-121)	11.32 AM - 11.44 AM	Development of a Mixing Process for Consumption of Wastes Generated During Steel Making Process <i>Prasanna Kumar</i>
A.II.2.3	AL-34(G-002)	11.44 AM - 11.56 AM	Application of Neural Networks for the Prediction of Steel Temperature in Ladle <i>Ajay Kumar Shukla and Brahma Deo</i>
A.II.2.4	AL-35(G-040)	11.56 AM - 12.08 PM	Computational Study of Vacuum Degassing Processes <i>M.K. Mondal, G.S. Gupta, S. Kitamura and N. Maruoka</i>
A.II.2.5	AL-36(G-134)	12.08 PM - 12.20 PM	Development of Mathematical Modeling for Calculation of Design Parameters of Continuous Casting <i>K. Ghosh, S. Sanyal, K. Bhattacharya, R. Dey, S. Mukherjee</i>
A.II.2.6	AL-37(G-106)	12.20 PM - 12.32 PM	Flow Optimization in Continuous Casting Tundish with Different Combination of Flow Modifier <i>Sujata Devi, Rajeev Kumar Singh, Amitava Paul and A. K. Ray</i>
A.II.2.7	AL-38(G-242)	12.32 PM - 12.44 PM	Optimizing End-to-End Steel Making Operations using Dynamic Simulation through Modular Decomposition <i>Atanu Mukherjee, Subrata Mitra and Arnab Adak</i>
A.II.2.8	AL-39(G-174)	12.44 PM - 12.56 PM	Physical Modeling Optimization of Dam Height in Tundish for Improved Inclusion Flotation <i>Pranav Tripathi, Sujay Patil, D Satish Kumar, Abhijit Sarkar and P C Mahapatra</i>
		12.56 PM - 01.00 PM	Concluding remarks by the session chair

## SESSION A.II.3: STEEL MAKING II

**Schedule: 2.00 PM to 4.00 PM**

**Session Chairman: Prof. Ajit K. Chakraborti (Past Metal News Editor)**

<b>Keynote Lecture</b>	<b>AK-5</b>	02.00 PM - 02.20 PM	Hisarna: New Ironmaking to Meet the Challenge of Future Resource Constraints <i>Mark B. Denys</i>
A.II.3.1	AL-40(G-081)	02.20 PM - 02.32 PM	Technologies for Recycling Steelmaking Residues <i>Ingo Both, Adriano Chiappero, Thomas Hansmann and Jean-Luc Roth</i>
A.II.3.2	AL-41(W-011)	02.32 PM - 02.44 PM	Practical Study of Carbon Boil in Clean Steel Making <i>L.B. Singh</i>

A.II.3.3	AL-42(G-192)	02.44 PM - 02.56 PM	Design & Development in MgO-C / MgO- Al <sub>2</sub> O <sub>3</sub> -C Lining of 150T Secondary Steel Ladles of VSP (RINL), Vizag <i>Ajay Dasgupta, Sujit Bhattacharya, Soumyadip Roy and Priyabrata Panda</i>
A.II.3.4	AL-43(W-078)	02.56 PM - 03.08 PM	An Overview of Microwave Applications in Iron and Steelmaking Industry <i>Suresh. S and N.N. Viswanathan</i>
A.II.3.5	AL-44(W-051)	03.08 PM - 03.20 PM	Improvement in the Performances of EAF using Hot Metal <i>Manish Kumar, S.N.Sinha and T.K.Ghosh</i>
A.II.3.6	AL-45(W-049)	03.20 PM - 03.32 PM	Use of LD Slag as Aggregates in Concrete Making <i>Arup Kumar Mallik</i>
A.II.3.7	AL-46(G-277)	03.32 PM - 03.44 PM	External Desulphurization of Hot Metal in India- Present Practice <i>Animesh Sengupta</i>
A.II.3.8	AL-47(G-104)	03.44 PM - 03.56 PM	Heat Processing with High Phosphorus in Twin Hearth Furnace <i>S.K. Gupta, A.K. Mukherjee, A. Paul, S. Kumar and R. Saha</i>
		03.56 PM - 04.00 PM	Concluding remarks by the session chair

## SYMPOSIUM A: C V SUNDARAM MEMORIAL SYMPOSIUM ON EXTRACTIVE METALLURGY

### POSTER PRESENTATION

Serial Number	Abstract Number	Paper Title and Authors
1.	AP-48(W-008)	Utilisation of Chromite Plant Dedusting Fines by Sintering Technique <i>Ratna Dasgupta, Geetikamayee Padhy and P.S.R Reddy</i>
2.	AP-49(W- 072)	Study of Porosity of Iron Ore Sinter and Its Impact on Strength and Reduction Characteristics <i>Dhirendra Prasad, Anant Prakash, S. N. Sinha and Indranil Chakrabarti</i>
3.	AP-50(G-116)	Studies on the Effect of Coking and Soaking Periods on BF Coke Properties <i>T.K. Das, S. Mishra, B.K. Sahoo, K.N. Ghosh, O.S. Niyogi and B.N. Prasad</i>
4.	AP-52(G-154)	Development of Fuel Balls from Coal Fly-ash and Crop Residues <i>R.B.Gupta, G. C. Pattanaik, Pallavi Gupta and P. Prasanth Kumar</i>
5.	AP-54(W-117)	Low Draft Operation in Non-recovery Coke Oven at JSW <i>Abhi Kinlekar, S. C. Barman, Shaikshavali, Rajeev Ranjan and Anil Kumar</i>
6.	AP-55(W-122)	Sinter Making: A Possible Route of Solid Industrial Waste Utilization <i>Prasanna Kumar</i>
7.	AP-56(W-123)	Utilization of Organic Binders in Pellet <i>Prasanna Kumar</i>
8.	AP-57(G-167)	Influence of Alumina on Iron Ore Sinter Quality and Productivity <i>T. Umadevi, S.Prakash Rao, M. Prabhu, P.C. Mahapatra and Madhu Ranjan</i>
9.	AP-58(G-168)	Impact of Dolomite on Sinter Properties <i>S S Yadav, P.Karthik, Vivek Rai, A.K.Roy, M.Prabhu and T.K.Naha</i>

10. AP-59(W-104) Immobilization of Water Leachable Metals of Fly Ash  
*S.D. Muduli, B.D. Nayak, P. Chattopadhyay and B.K. Mishra*
11. AP-60(G-203) Mineral Beneficiation and Agglomeration Bi223 Superconductor Magnet with Microwave Interaction to Separate Impurities from Minerals  
*Mihir Sen and Arindam Sen*
12. AP-61(W-092) Effect of Reductant on Smelting of Sea Nodules for the Recovery of Copper, Nickel & Cobalt  
*Sanjay Agarwal, K.M.Godiwalla, K.K.Sahu, R.K.Jana*
13. AP-62(G-156) Effective Bag House with Spunbond Cartridge Filters for Hot Metal Fumes in Steel Industry -Case Study at 1681 m<sup>3</sup> Blast Furnace, JSW Steel Ltd, Bellary, India  
*R. Ramesh Achar*
14. AP-63(G-170) A Different Approach for Safe Blow-down of Blast Furnace  
*A Srinivas Rao, Shashank Pandey, Mrunmaya K P, P Prachethan Kumar and V Shyam Sundar*
15. AP-64(G-171) An Innovative Approach for Blow-in of Blast Furnace after a Long Shut Down  
*A Srinivas Rao, Shashank Pandey, Mrunmaya K P and D A Sudheer*
16. AP-65(G-173) Improvement of Pulverised Coal Injection Rate at JSW No.2 Blast Furnace  
*A Srinivas Rao, Mrunmaya K P, Shashank Pandey and G Mallikarjun*
17. AP-66(W-163) Carbothermic Reduction of Hydro-Refining Spent Catalyst to Extract Molybdenum  
*B.B.Kar*
18. AP-67(G-012) Recovery of Acid and Iron Values from the Spent Pickle Liquor by Solvent Extraction  
*Manish K. Sinha, S. K. Sahu, Pratima Meshram, B.D.Pandey and V.Kumar*
19. AP-68(G-085) Processing of Lean Grade Lateritic Chromite Overburden for the Recovery of Iron & Nickel  
*A Mandal, A De, Soumy Mukherjee, S Mukherjee and R Dey*
20. AP-69(G-052) Alstick-- A New Efficient Method for Deoxidation of Steel with Aluminium  
*Ranendra Kumar Bhattacharya*
21. AP-71(G-068) Quantum Jump in Converter Lining Life at RSP, SAIL, Rourkela  
*S.Chandrasekaran, S.K.Prasad, S.K.Bandopadhyay and M.K.Pradhan*
22. AP-72(G-009) Measures to Enhance Productivity of Special Steel  
*A.N. Misra*
23. AP-73(G-110) Improvement in Steel Ladle Lining Life with In-House Bricks at SMS-II, RSP  
*P.K.RayChoudhury, N.K.Ghosh, M.K. Kujur, S.K. Banerjee, S. Mukherjee, C. Banerjee and S. Chandrashekhara*
24. AP-74(G-247) Optimization in Down-Time of Twin Hearth Furnace  
*SP Vishwakarma*
25. AP-75(G-157) Single Cell Extraction of Limonite (2Fe<sub>2</sub>O<sub>3</sub>·3H<sub>2</sub>O) & Hydrated Magnetite by Chloride Method  
*Vijaya Saradhi Sanam, Suresh Kumar, Renuka Meti, K. L. Bhat and P. L. N. Reddy*
26. AP-76(W-231) Mechanically Induced Reactivity in Boehmite (-AlOOH)  
*T.C. Alex, Rakesh Kumar, Ansu J. Kailath, S.K. Roy and S.P. Mehrotra*
27. AP-77(G-285) Infrared Based Measuring and Control System for Cutting the Bloom at Desired Length in 3 Strands Caster  
*M.R. Khare, R. Jain, A. Bandyopadhyay, H. Rao and Madhusudan*
28. AP-78(G-289) Reduction of Alumina in Lateritic Iron Ore through Process Mineralogy and Beneficiation using Multi Gravity Separator  
*Vinod Kumar, G. N. Jadhav, N. K. Khosla, M.K. Mohanta, R. P. Bhagat and K.K. Bhattacharyya*
29. AP-79(G-307) Secondary Metallurgy @ Siemens VAI Modern LF-RH High Productive Plants  
*Henning Huschka, Huellen Markus, Michel Hein and Andrea Pezza*

- 
30. AP-80(G-313) Improvement in Coke Crushing at DSP  
*Lohitendu Badu*
  31. AP-81(G-317) Synthesis of Carbon Fiber Reinforced Silicon Carbide Mini-Composites by Soft-Solution Approach  
*N. Padmavathi, J. Subrahmanyam, P. Ghosal and K. K. Ray*
  32. AP-82(G-318) Development of Fluxed Iron Oxide Pellets for Steel Making Utilizing Waste Materials  
*J. Pal, S.Ghorai, D. P. Singh, A. K. Upadhyay, M. C. Goswami, D. Bandyopadhyaya, D. Ghosh and S. Ghosh*
  33. AP-83(G-321) Ever Highest Converter Lining Life 6249 Heats  
*P Kumar, K Majhi, P Srinivasan and S K Banerjee*

## SYMPOSIUM B: PLACID RODRIGUEZ MEMORIAL SYMPOSIUM ON MATERIALS PROCESSING

**VENUE: HALL B**  
**CONVENOR: Professor S. Ghosh**

**DAY 1; November 16, 2009; MONDAY**

### SESSION B.I.1: CASTING AND SOLIDIFICATION TECHNOLOGY

**Schedule: 8.45 AM to 10.45 AM**

**Session Chairman: Dr. Baldev Raj (Past President, IIM)**

Session and Serial	Abstract Number	Schedule	Paper Title and Authors
		8.45 AM - 8.50 AM	Tribute to Late Placid Rodriguez by Dr. Baldev Raj
<b>Award Lectures</b>	<b>NMD-3</b>	8.50 AM - 9.05 AM	Engineering Critical Assessment: Concept and Application <i>S. Tarafder</i>
	<b>NMD-4</b>	9.05 AM - 9.20 AM	Indigenous Development and Processing of Aerospace Materials <i>R. K. Gupta</i>
B.I.1.1	BL-01(G-041)	9.21 AM - 9.33 AM	Microstructure Evolution by Liquid Silicon Infiltration of Boron Carbide (B <sub>4</sub> C) <i>Manish Patel, S. Shafiyullah, Praveen Kumar and V. V. Bhanu Prasad</i>
B.I.1.2	BL-02(G-222)	9.33 AM - 9.45 AM	A Two-Dimensional Model of Droplet Impact and Solidification <i>Amitesh Kumar, Sudipto Ghosh and B.K.Dhindaw</i>
B.I.1.3	BL-03(G-033)	9.45 AM - 9.57 AM	Productivity Enhancement of Thin Slab Continuous Caster by Increasing Metallurgical Length and Slab Thickness <i>Irfan I Momin, Atanu Kumar Borkotoky, Vijay K Gupta and Pradip K Patra</i>
B.I.1.4	BL-04(G-230)	9.57 AM - 10.09 AM	Simulation of Fatigue Crack Growth in Slab Caster Revamping Solutions - Highlights of 30 Years Experience <i>O. Schulz, K. Engel, M Haslinger and F. Derflinger</i>
B.I.1.5	BL-05(W-191)	10.09 AM - 10.21 AM	An Outline of the Investment Casting Process of the Aircraft Parts Made Out of Titanium Alloys At HAL, Koraput <i>Debashis Deb, Kallol Bhattacharyya and Shishira Kanta Samantray</i>
B.I.1.6	BL-06(G-067)	10.21 AM - 10.33 AM	Improvement of Slab Productivity & Quality at SMS-II, SAIL, RSP, Rourkela <i>M.K.Pradhan, P.Lenka, G.C.Pattnaik and S.P.Das</i>
B.I.1.7	BL-07(G-269)	10.33 AM - 10.45 AM	A Comparative Study of Quinary (TiTaZr) <sub>x</sub> (NiCu) <sub>100-x</sub> (X= 50, 33, 66) Alloy Systems Processed through Novel Suction Casting Technique <i>K.Sudarshna, S.Ranganathan and K.Chattopadhyay</i>

## SESSION B.I.2: DEFORMATION PROCESSING OF MATERIALS

**Schedule: 11.00 AM to 1.00 PM**

**Session Chairman: Prof. R. K. Ray (Tata Steel)**

<b>Keynote Lecture</b>	<b>BK-1</b>	11.00 AM - 11.20 AM	Energy Absorption by Aluminium Based Foams <i>Amol A. Gokhale</i>
B.I.2.1	BL-08(G-152)	11.20 AM - 11.32 AM	Recrystallization Behavior of Cryo-Rolled Copper <i>K. Barai, A. Haldar and P. P Chattopadhyay</i>
B.I.2.2	BL-09(W-157)	11.32 AM - 11.44 AM	Serrated Yielding in Alloy 718 <i>Sachin Nalawade, Amit Verma, M. Sundararaman, J. B. Singh and R. Kishore</i>
B.I.2.3	BL-10(W-070)	11.44 AM - 11.56 AM	Effect of Two-Step Strain Rate on the Superplastic Behaviour of High Strength Al-Zn-Mg-Cu-Zr Alloys <i>Amit Kumar and A. K. Mukhopadhyay</i>
B.I.2.4	BL-11(W-186)	11.56 AM - 12.08 PM	Effect of Relative Density, Strain Rate and Size of Cenosphere on the Compressive Deformation Behaviour of Al-alloy-Cenosphere Syntactic Foam <i>D. P. Mondal and S. Das</i>
B.I.2.5	BL-12(W-207)	12.08 PM - 12.20 PM	Bulk Ultra Fine Grained Aa3003 Alloy Processed By Equal Channel Angular Pressing <i>Rajnish Kumar, R. J. Singh, G. V. S Sastry and R. Manna</i>
B.I.2.6	BL-13(G-006)	12.20 PM - 12.32 PM	Effect of Niobium and Titanium inoculation on Mechanical properties of Fe-Cr-Mo-V Ultra High Strength Steel <i>Suraj Toppoa, Arunav SenGupta and N.B.Ballal</i>
B.I.2.7	BL-14(W-106)	12.32 PM - 12.44 PM	Effect of Strain Rate on Deformation of Extruded Mg-2Zn-0.2Ce <i>Vasantha Venkataraman, Bharathi Rajeswaran, Anil K. Sachdev, Raja K. Mishra and S. Karthikeyan</i>
B.I.2.8	BL-15(G-191)	12.44 PM - 12.56 PM	Bulk Deformation Behavior of Two Phase Nanocrystalline Aluminum-lead Composites <i>K.V. Rajulapati, R. O. Scattergood, K. L. Murty and C. C. Koch</i>
		12.56 PM - 01.00 PM	Concluding remarks by session chair

## SESSION B.I.3: CREEP, FAILURE ANALYSIS AND EVALUATION

**Schedule: 4.15 PM to 6.15 PM**

**Session Chairman: Dr. J. Mukhopadhyay (JNARDDC)**

<b>Keynote Lecture</b>	<b>BK-2</b>	04.15 PM - 04.35 PM	Innovative Material Processing for Tailoring Microstructure and Properties in Nuclear Structural Materials <i>T. Jayakumar</i>
B.I.3.1	BL-16(G-155)	04.35 PM - 04.47 PM	Steady State Creep Behavior of Titanium Matrix Composites <i>K. Srinivasa Vadayar, D. V. V. Satyanarayana, G. Poshal and V.V. Bhanu Prasad</i>
B.I.3.2	BL-17(W-045)	04.47 PM - 04.59 PM	Probabilistic Creep Life Assessment of Austenitic Stainless Steel <i>S.C. Bose, N. Roy, and R.N. Ghosh</i>

B.I.3.3	BL-18(W-075)	04.59 PM - 05.11 PM	Creep Behaviour of Cast and Mushy State Rolled Al-4.5 Cu alloy and In situ Al-4.5 Cu-5 TiB <sub>2</sub> Composite <i>Siddhalingeswar I.G., R. Mitra, and M. Chakraborty</i>
B.I.3.4	BL-19(W-179)	05.11 PM - 05.23 PM	Creep Behavior of AZ91 Magnesium Alloy <i>A. Srinivasan, U.T.S. Pillai, J. Swaminathan and B.C. Pai</i>
B.I.3.5	BL-20(G-255)	05.23 PM - 05.35 PM	Indentation Creep Behavior Of T23 Steel And Their Weldments <i>R.Nagalakshmi, V.Anbazhagan, S.Manimozhi, S.Sivakumar V. Sudhakar and S.Jerome</i>
B.I.3.6	BL-21(W-073)	05.35 PM - 05.47 PM	Flash Butt Welded Wheel Rim Failure <i>Nilotpal Dey</i>
B.I.3.7	BL-22(G-109)	05.47 PM - 05.59 PM	Improvement in Service Life of Sinter Screen Decks of Sintering Plant of Bhilai Steel Plant Using Metallic Carbide Hard Facing Alloy <i>M. Kalet, B.D. Tripathi, A.G. Hazra, V.K. Malhotra and H.K. Joshi</i>
B.I.3.8	BL-23(G-141)	05.59 PM - 06.11 PM	Evolution of Bainitic Microstructure in High Silicon Steels <i>M. Kundu, D. Naskar, S. Datta and P.P. Chattopadhyay</i>
		06.11 PM - 06.15 PM	Concluding remarks by session chair

## DAY 2; November 17, 2009; TUESDAY

### SESSION B.II.1: CONVENTIONAL AND ADVANCED JOINING PROCESSES

Schedule: 8.45 AM to 10.45 AM  
Session Chairman: Prof. M. Chakraborty (IIT Bhubaneswar)

<b>Keynote Lecture</b>	<b>BK-3</b>	8.45 AM - 9.05 AM	Welding and Hardfacing for the Indian Prototype Fast Breeder Reactor <i>A.K. Bhaduri</i>
B.II.1.1	BL-24(W-126)	9.05 AM - 9.17 AM	Laser TIG Hybrid Welding of Stainless Steel and Copper <i>Anjan Chatterjee, Santosh Kumar, R.P. Kushwaha, C.S. Viswanadham, U.D. Kulkarni and G.K. Dey</i>
B.II.1.2	BL-25(G-049)	9.17 AM - 9.29 AM	Joining of Ti-5 Ta-1.8 Nb and 340L Stainless Steel by Explosive Welding and Characterization of the Microstructure <i>T. N. Prasanthi, C. sudha, S. Saroja and M. Vijayalakahmi</i>
B.II.1.3	BL-26(G-123)	9.29 AM - 9.41 AM	Friction Stir Welding of Dissimilar Aluminium Alloys: Optimization of Process Parameters <i>M. Ghosh, S. K. Das, S. V. Kailas, K. Kumar and A. K. Ray</i>
B.II.1.4	BL-27(G-136)	9.41 AM - 9.53 AM	Microstructure and Mechanical Properties of Diffusion Bonded Joints of Titanium to Stainless Steel with Al Interlayer <i>Anish Karmakar, S. Kundu and S. Chatterjee</i>
B.II.1.5	BL-28(G-200)	9.53 AM - 10.05 AM	Microstructure and Strength Properties of Commercially Pure Al and Interstitial Free Steel Friction Stir Welded Joints <i>D. Roy, S. Kundu, D. Bhattacharjee and S. Chatterjee</i>
B.II.1.6	BL-29(G-092)	10.05 AM - 10.17 AM	Joining of 6061-15 wt% SiC <sub>p</sub> by TLP Diffusion Bonding Process using Copper Foil and Copper Powder Interlayer <i>Joydeep Maity and Tapan Kumar Pal</i>

B.II.1.7	BL-30(G-077)	10.17 AM - 10.29 AM	Estimation of Process Parameters for Explosive Cladding of Ti-SS Joints through Weldability Window <i>S. Saravanan and K. Raghukandan</i>
B.II.1.8	BL-31(W-177)	10.29 AM - 10.41 AM	Flash Butt Welding of Swaged Molybdenum Wire Rod <i>K. Rajasekhar, R. Ravibharath and Pallab Sarkar</i>
		10.41 AM - 10.45 AM	Concluding remarks by the session chair

## SESSION B.II.2: MATHEMATICAL MODELING OF MATERIALS PROCESSING

**Schedule: 11.00 AM to 1.00 PM**

**Session Chairman: Dr. V. Ramaswamy (PSG College of Technology)**

<b>Keynote Lecture</b>	<b>BK-4</b>	11.00 AM - 11.20 AM	Application of Computational Fluid Dynamics to Steelmaking and Continuous Casting Processes <i>A.K.Ray and Rajeiv Kumar Singh</i>
B.II.2.1	BL-32(G-050)	11.20 AM - 11.32 AM	Modeling and System Development for Ingot Heating Process <i>N. K. Nath, Sagar H. Bhalerao, Ravi S. Sathe and Amitava Chowdhury</i>
B.II.2.2	BL-33(G-220)	11.32 AM - 11.44 AM	Experimental Studies and Numerical Simulation of Small Specimen Mechanical Tests <i>P.Visweswaran, V.Karthik, N.G.Muralidharan, Jojo Joseph, K.V.Kasiviswanathan and Baldev Raj</i>
B.II.2.3	BL-34(W-046)	11.44 AM - 11.56 AM	Crystal Plasticity Simulation of Plastic Deformation of Pure Mg with Random Texture <i>Apu Sarkar and J.K. Chakravartty</i>
B.II.2.4	BL-35(W-196)	11.56 AM - 12.08 PM	Modeling of Material Properties using JMatPro Software <i>Balasubramani Nandagopal, Rahul Ravindra Kulkarni and Vijaymahantesh Patil</i>
B.II.2.5	BL-36(W-064)	12.08 PM - 12.20 PM	3D Simulation of Effective Stress, Strain and Load Curve by using Equal Channel Angular Pressing <i>S. Ramesh Kumar, P. Venkatachalam and B. Ravisankar</i>
B.II.2.6	BL-37(G-224)	12.20 PM - 12.32 PM	Simulation of Fatigue Crack Growth in an Aeroengine Compressor Disc <i>A.Venugopal Rao, S.Shamasundar and Vikas Kumar</i>
B.II.2.7	BL-38(G-118)	12.32 PM - 12.44 PM	Development of a Simulation Model of Railway Wheel Processing by Finite Element Method <i>D.K. Jain, S.K. Jha, B. Roy, B. Krishna and D. Rai</i>
B.II.2.8	BL-39(W-101)	12.44 PM - 12.56 PM	Dislocation Dynamics Simulations of Jogged- Screw Dislocation <i>R Sivaraman and S.Karthikeyan</i>
		12.56 PM - 01.00 PM	Concluding remarks by the session chair

**SESSION B.II.3: FRACTURE MECHANICS**  
**Schedule: 2.00 PM to 4.00 PM**  
**Session Chairman: Prof. T. K. Roy (BESU, Howrah)**

<b>Keynote Lecture</b>	<b>BK-5</b>	02.00 PM - 02.20 PM	Towards Miniaturization of Fracture Toughness Test Specimens <i>K. K. Ray</i>
B.II.3.1	BL-40(W-034)	02.20 PM - 02.32 PM	Effect of Various Precipitates on the Fracture Morphologies of Alloy 625 <i>Joy Mittra, U. D. Kulkarni and G. K. Dey</i>
B.II.3.2	BL-41(G-001)	02.32 PM - 02.44 PM	Electron Back Scatter Diffraction Study of Crack Initiation During Dwell Fatigue in a Near Alpha Titanium Alloy <i>A. Bhattacharjee and J.C. Williams</i>
B.II.3.3	BL-42(W-079)	02.44 PM - 02.56 PM	A Study on Amplification of Acoustic Emission Signals during Tensile Deformation of Aluminium <i>Avijit Suman, Baldev Raj, B.P.C. Rao, T.K. Haneef, C.K. Mukhopadhyay and T. Jayakumar</i>
B.II.3.4	BL-43(W-062)	02.56 PM - 03.08 PM	Indentation Fracture Toughness Study of Pipe Material Using Support from FE Simulation and Continuum Damage Mechanics <i>Sabita Ghosh, Mita Tarafder, Mousumi Das, Goutam Das and Soumitra Tarafder</i>
B.II.3.5	BL-44(W-160)	03.08 PM - 03.20 PM	Effect of R-ratio on the Crack Tip Damage in AISI 304LN Stainless Steel under Cyclic Loading <i>H. Roy, S. Sivaprasad, S. Tarafder and K. K. Ray</i>
B.II.3.6	BL-45(W-174)	03.20 PM - 03.32 PM	Mechanism of Fatigue Fracture in Steel Sheet <i>S. Majumdar, D. Bhattacharjee and K. K. Ray</i>
B.II.3.7	BL-46(W-183)	03.32 PM - 03.44 PM	Fabrication and Calibration of a Direct Current Potential Drop Crack Measuring Unit <i>N. Kumar, A. Kumar, B. B. Verma and P. K. Roy</i>
B.II.3.8	BL-47(W-058)	03.44 PM - 03.56 PM	Mechanical Behavior of B-Modified Ti-6Al-4V Alloys <i>Indrani Sen and U. Ramamurty</i>
		03.56 PM - 04.00 PM	Concluding remarks by the session chair

**SYMPOSIUM B: PLACID RODRIGUEZ MEMORIAL SYMPOSIUM ON MATERIALS PROCESSING**

**POSTER PRESENTATION**

Serial Number	Abstract Number	Paper Title and Authors
1.	BP-48(G-004)	Advantages of Sub Zero Treatment on the Performance of Cold Rolling Mill Work Rolls. <i>A.K. Verma</i>
2.	BP-49(G-028)	Electrodeposition of Alumina from Sulphate Electrolyte <i>M. Dadapeer, K. L. Bhat and P. L. N. Reddy</i>

3. BP-50(G-046) Characterization of High Strength Steel joined by Solid State Bonding  
*Md Murtuja Husain*
4. BP-51(G-055) Weldability Window for Explosive Cladding of Titan 12/Ss 304 L Plates  
*P.Tamilchelvan, K.Raghukanadan, N.Maikandan and K.Hokamoto*
5. BP-52(G-062) Hot Rolling Texture of Binary Ti-Nb Alloys  
*S. Banumathy, R. K. Mandal and A. K. Singh*
6. BP-53(G-065) Casting of Skid-Bar Steel, Used In Reheating Furnace of Wire-Rod Mill  
*A B Puang, and SP Vishwakarma*
7. BP-54(G-074) On the Deformation Behaviour of Dual Phase Steel  
*S. Mukherjee, S. Bagchi and D. Das*
8. BP-55(G-080) Structural Integrity Assessment of Gun Barrel under Fatigue Loading Condition  
*Shahnawaz Ahmad and Vikas Kumar*
9. BP-56(G-090) Challenges of Making Inhouse Castables at Refractory Materials Plant- I Bhilai Steel Plant  
*S Roy Chowdhury, Madhusudan and Ashok Kumar*
10. BP-57(G-093) Prediction of Kinetics of Metal Transfer in Submerged Arc Welding from Flux Ingredients with the Help of Statistical Design of Experiments for Mixture  
*P. Kanjilal, S.K. Majumdar and T.K. Pal*
11. BP-58(G-098) Dynamic Recrystallization in Sintered Cobalt During High Temperature Deformation  
*B. Paul, A.Sarkar, A.Verma, R.Kapoor, A.C.Bidaye, I.G.Sharma, and J.K.Chakrabarty*
12. BP-59(G-102) Development of Methodology for Reduction in NCO (Non-Conformity to Order) at Plate Mill, RSP  
*S.K. Thakur, S. Rath, A.K. Marik, P.K. Prusty, G.K. Sinha, A.P. Singh and D. Rai*
13. BP-60(G-105) Development of Micro-Alloyed Z-Bar at Heavy Structural Mill of ISP, Burnpur  
*P.P. Sengupta, S. Sen, D. Karmakar, K. Choubey and R.K. Banerjee*
14. BP-61(G-108) Introduction of Curtain Flame Ignition System for Sintering Process in Durgapur Steel Plant, SAIL  
*Partha Banerjee, Anup Kumar Bhattacharya, T.S. Reddy, P. Chintaiyah, S.A. Balaji, Martin Jojo and Prabhat Kumar*
15. BP-62(G-114) Control of Damper in the Suction Line of a Sinter Plant to Reduce Electrical Energy Consumption  
*B. N. Ghosh, Vikash Kumar, B. V. Dash, S. Singh and A. K. Paul*
16. BP-63(G-117) Improvement in Continuous Annealing Line of Cold Rolling Mill at BSL  
*Seema Ghosh, P. Kumar, K.K. Mallik, D. Adhikary, S. Chattopadhyay and A.P. Singh*
17. BP-64(G-119) Introduction of Roll Bite Lubrication in Hot Strip Mill of Bokaro Steel Plant  
*P. Pathak, N. Mondal, A. Verma, A.P. Singh, S.K. Sinha, D. Rai and K.N. Changder*
18. BP-65(G-120) Computerized Process Information System for Bell Annealing Line # 2, Cold Rolling Mill, Bokaro Steel Plant  
*S. K. Saha, S. Mitra, M. Gangadaran, B. K. Prasad, A. K. Paul, S. K. Roy, N. K. Ghosh, S. Chattopadhyay and S. Roy Choudhary*
19. BP-66(G-121) Special Rail Steel Production at Bhilai Steel Plant  
*A.K.Khare, R.K.Rathi, Binitosh Bala and Dinamani Nayak*
20. BP-67(G-137) Interfacial Reactions and Joint Strength of Micro-duplex Stainless Steel Nickel alloy Titanium Alloy Diffusion Bonded Couples  
*Basudeb Bag, Abhijit Mondal, S. Kundu and S. Chatterjee*
21. BP-68(G-162) Effect of Cobalt Aluminate Inoculant on RT Tensile and Stress Rupture Properties of a Ni-base Superalloy Aeroengine Component  
*G. Ravi Krishna, M. Nirmal Kumar, S.G. Topno, R.R. Bhat and Mohan Abraham*

22. BP-69(G-175) Development of Ti-IF Steel Sheet by Batch Annealing Process at JSW Steel, Vijaynagar Works  
*Niranjan Behera, Devasish Mishra, Kinshuk Roy, S.Manjini, Sanjay Sharma and G.S.Rathore*
23. BP-70(G-177) Characterization of Sliver Defects in Cold Rolled Sheets  
*D.Satish Kumar, D Mishra, B N S Prakash Rao, P K Ghorui and Madhu Ranjan*
24. BP-71(G-178) Optimization of Rolling Parameters for Improved Grain Structure in Drawing Grade Steel  
*Pradeep Agarwal, Manohar Namani, Madhusudana R and Madhu Ranjan*
25. BP-72(G-183) Production of Functionally Gradient Al-Si Alloys Using Cast - Decant - Cast (CDC) Process.  
*S. Chandra Prakash, D. Nagarajan and S. S. Mohamed Nazirudeen*
26. BP-73(G-185) Creep Study of Dissimilar Weld Joints of T23+347H with Inconel GTAW Filler Rod  
*V. Anbazhagan, Kulvir singh, G. Jaipal Reddy, M. Kayarohanam, S. Singaravelu and Mohammad Abid*
27. BP-74(G-202) Development of Line Pipe Steel at JSW Vijayanagar Works  
*D Mishra, Aswini Kumar, A Dunga, S C Viswanath and P K Ghorui*
28. BP-75(G-205) Impact of Post Rolling Thermal Treatment on the Recrystallised Austenite Grain Size in High Carbon Wire Rods  
*Sandarbh Srivastava*
29. BP-76(G-209) Development of Ring Forgings in Nickel Base Superalloy 263 for Aero-Engine Application  
*P.V. Neminathan, M.S. Velpari, S.R. Ananda Rao and A.K. Gogia*
30. BP-77(G-213) Effect of Ageing at 643 K (370 °C) on Room Temperature Fracture Toughness of SS 316 (N) Welds  
*Shashank D B, Nani Babu M, Venugopal S and Sasikala G*
31. BP-78(G-231) Worldwide Longest Continuous Casting Machine for Highest Performance at POSCO Gwangyang Work CCP2-CCM3/South Korea  
*P. Pennerstofer and J. Penn*
32. BP-79(G-243) Modeling the Deformation Behavior of Multiphase Steel  
*S. Ganguly, P. P. Chattopadhyay and S. Datta*
33. BP-80(G-244) Development of Large Size AA2219 Aluminium Alloy Open Die Forging for Aerospace Applications  
*G Madhusudhan, S Venkata Kishore, R R Bhat and Mohan Abraham*
34. BP-81(W-14) Study of Steam Treatment on Sintered Iron Components  
*Nachiket S. Deshmane, N.B. Dhokey, Mahesh Kamble, Niranjan Narkhede and B.S. Thanekar*
35. BP-82(W-18) Simulation of Forging of Steel Components  
*M Madan, K M Godiwalla and S K Das*
36. BP-83(W-26) Inner Cover Failure of Batch Annealing Furnace in CRM - A Case Study  
*Arhitha Dey, M B Das and Nilotpal Dey*
37. BP-84(W-32) Effect of Grain Size and Microstructure on Fatigue Crack Growth Rate in SAE 1541 Steel  
*S.Gowthama, K.Kalaichelvan, P.Shanmugam and R.Natarajan*
38. BP-85(W-050) Thermal Stability of Multi-Axial Forged Interstitial Free Steel  
*Pankaj kumar, Somjeet Biswas, Satyaveer singh and Satyam Suwas*
39. BP-87(W-054) A Comparative Study of Tensile and Compressive Deformation Behaviour of Plain Carbon Steel  
*Krishna Dutta and K. K. Ray*
40. BP-89(W-066) Fractal Analysis of Charpy Fractured Specimens of Coarse and Fine Grained 9Cr-1Mo Steel Tested at Brittle Temperature Regime  
*T. Karthikeyan, S. Saroja, S. Rachael Reena and M. Vijayalakshmi*
41. BP-90(W-067) Assessment of Short-Term Creep and Stress Rupture Properties of P91 Material  
*Prabir Kumar Roy*

42. BP-91(W-076) Effect of Strain Rate on the Mechanical Properties of TWIP Steel  
*V. Rajakumaran, Sushil K. Giri, Sumitesh Das and S. Karthikeyan*
43. BP-92(W-083) Geometrical Constraints InFLuencing Multiaxiality in Circumferentially V-Notched Bar  
*S.R.Charde, D.R.Peshwe, R.K.Paretkar and M.D.Mathew*
44. BP-93(W-085) Accumulative Roll Bonding of Wrought Magnesium Alloy AZ31  
*H Shivananda Nayaka, B S S Daniel and G P Chaudhari*
45. BP-94(W-098) Optimization of Processing Parameters for Hot Working of Modified 9Cr-1Mo Steel using Processing Map  
*Dipti Samantaray, Sumantra Mandal and A.K Bhaduri*
46. BP-95(W-099) Uncertainty Modeling in Spherical Indentation Reliability of Elastic-Plastic Solids  
*A K Datta and G Das*
47. BP-96(W-105) Determination of Fracture Toughness of Polymer Matrix Composites - Experimental and Theoretical Methods  
*M.S. Sham Prasad, T Jayaraju, C. S. Venkatesha and P. R. Sadananda Rao*
48. BP-97(W-116) An Investigation of Coil Break Behaviors in Hot Rolled Steel Strip  
*Praveen Kuamr, Pradeep Agarwal, Nilesh Chaudhary, Sanjay Sharma and Madhu Ranjan*
49. BP-98(W-120) Creep Behavior of Powder Metallurgy Processed and Hot Rolled Al and Al-SiC<sub>p</sub> Composites  
*Sharmilee Pal, V. V. Bhanuprasad, R. Mitra and K. K. Ray*
50. BP-99(W-125) Evaluation of Fracture Mechanics Parameters of Thin-Walled Fuel Clad Tubes of Indian PHWR  
*G. Sanyal, M.K. Samal and J.K. Chakravarty*
51. BP-100(W-136) Solid State Diffusion Properties of Zr-Al System  
*A. Laik and K. Bhanumurthy*
52. BP-101(W-141) Processing of Aluminum Matrix Composites by Squeeze Casting  
*S. Jain, K. Chandra and V. Agarwala*
53. BP-102(W-161) Effect of Stress Amplitude and Mean Stress on the Ratchetting Behavior of Polycrystalline of HC Copper  
*D. Das and P. C. Chakraborti*
54. BP-103(W-169) Determination of Fracture Toughness of ductile Material 20MnMoNi55 Steel  
*N. Narasaiah, S. Tarafder and S. Sivaprasad*
55. BP-104(W-185) Effect of Temperature and Strain Rate on the Compressive Deformation Behaviour of Al-alloy-Cenosphere Syntactic Foam Made Through Stir Casting Technique  
*D. P. Mondal, S. Das, Nidhi Jha and Ramgopal Sharma*
56. BP-105(W-192) Effect of Breakout Parameter During Concast  
*Mohit Kumar Agarwal*
57. BP-106(W-202) Study of Hardness Distribution and Calorimetric Behaviour of 7150 Aluminium Alloy Processed by High Pressure Torsion  
*K. S. Ghosh, N. Gao and M. J. Starink*
58. BP-107(W-203) Formation of Longitudinal Crack During Solidification of Liquid Steel in Thin Slab Continuous Casting  
*Ranjan K Sahoo, Vijayasradhi Sanam, Vijaya Lakshmi, Vinod Kumar Yadav, Atanu Kumar Borkotoky and Pradip K Patra*
59. BP-108(W-220) Effect of Heat Input on Mechanical Properties of Gas Tungsten Arc Welded AISI 316L Joints  
*A.S.Shahi, Kuldeep Singh, Jagtar Singh and Sorabh Khullar*
60. BP-109(W-222) Synthesis of Bi-layer Parts by Metal Injection Molding Process  
*G. N. Kotwal and P. P. Date*
61. BP-110(W-229) Strengthening of Aluminium Alloy AA7075 by Equal Channel Angular Pressing  
*Rajnish Kumar, R. J. Singh, G. V. S Sastry and R. Manna*

- 
62. BP-111(W-230) Influence of Hydrogen Content on Fracture Toughness of Heattreated Zr-2.5Nb Alloy  
*A. K. Bind, R. N. Singh, D. K. Shukla and J. K. Chakravartty*
63. BP-112(G-304) Creep Strength of Reduced Activation Ferritic-Martensitic Steel  
*J. Vanaja, K. Laha, K. S. Chandravathi, V. S. Srinivasan and M. D. Mathew*
64. BP-113(G-306) Combined Effect of Charcoal and Strontium on the Grain Refinement of AZ91 Mg Alloy  
*M. Suresh, A. Srinivasan, K.K. Ravikumar, U.T.S. Pillai and B.C. Pai*
65. BP-114(G-309) Siemens Metals' Technologies for Close Tolerance Rolling of Long Products  
*Luigi Giacomini*
66. BP-115(G-311) Effect of Temperature and Strain Rate on Tensile Behavior of Alloy 718  
*A. Sridhar, A. K. Gogia, Vikas Kumar and S. Ganesh Sundara Raman*
67. BP-116(G-315) Failure Analysis of Heat Exchanger  
*Asim Bag and Leong Yoong Khee*
68. BP-117(G-319) Micromechanical Aspects of Transgranular and Intergranular Failure Competition  
*I. Dlouhý, M. Tarafder and H. Hadraba*
69. BP-118(G-320) High Temperature Long Service Embrittlement of the RAFM EUROFER '97 Steel  
*Hynek Hadraba, Ludek Stratil and Ivo Dlouhy*

# SYMPOSIUM C: T R ANANTHARAMAN MEMORIAL SYMPOSIUM ON STRUCTURE-PROPERTY CORRELATION

**VENUE: HALL C**

**CONVENOR: Professor R. Mitra**

**DAY 1; November 16, 2009; MONDAY**

## SESSION C.I.1: METASTABLE MICROSTRUCTURE

**Schedule: 8.45 AM to 10.45 AM**

**Session Chairman: Prof P Rama Rao (Past President, IIM)**

Session and Serial	Abstract Number	Schedule	Paper Title and Authors
		8.45 AM - 8.50 AM	Tribute to Late T R Anantharaman
<b>Award Lectures</b>	<b>NMD-5</b>	8.50 AM - 9.05 AM	Combating Material Degradation Through Engineered Surfaces <i>Shrikant V. Joshi</i>
	<b>NMD-6</b>	9.05 AM - 9.20 AM	Solid state diffusion bonding of titanium and stainless steel using interlayers <i>S. Kundu</i>
C.I.1.1	CL-1(G-003)	9.21 AM - 9.33 AM	Spark Plasma Sintering and Microstructural Characteristics of Nanostructured Cu-Pb Alloys <i>Amit S. Sharma, B. Basu and K. Biswas</i>
C.I.1.2	CL-2(G-013)	9.33 AM - 9.45 AM	Influence of Process Parameters on the Microstructure and Soft Magnetic Properties of Nanostructured Fe-Si-B-Nb-Cu Melt Spun Alloys <i>B. Majumdar, M. Srinivas, D. Akhtar and V. Chandrasekaran</i>
C.I.1.3	CL-3(G-058)	9.45 AM - 9.57 AM	Microstructure and Mechanical Properties of Bulk Ultra Fine Grained Aluminum Alloys <i>R. Manna, N. K. Mukhopadhyay and G.V. S. Sastry</i>
C.I.1.4	CL-4(W-069)	9.57 AM - 10.09 AM	Synthesis, Microstructural and Mechanical Characterization of Ferritic Oxide Dispersion Strengthened Alloys Prepared by Mechanical Alloying <i>N.R. Karthikeyan, V.S. Sarma and B.S. Murty</i>
C.I.1.5	CL-5(G-143)	10.09 AM - 10.21 AM	Development of Cu-Added Hot Rolled Multiphase Steels <i>P. P. Chattopadhyay</i>
C.I.1.6	CL-6(W-096)	10.21 AM - 10.33 AM	Strain Rate, Temperature and Grain Size Effects on the Deformation of Tantalum <i>H. Bandyopadhyay and S. Karthikeyan</i>
C.I.1.7	CL-7(W-148)	10.33 AM - 10.45 AM	Influence of Specimen Orientation on Tensile Properties of CWSR Zr-2.5Nb Pressure Tube Material at 25 and 300°C <i>S. S. Pandey, P. Srinivas, R. N. Singh, A. Sarkar and J. K. Chakravarty</i>

## SESSION C.I.2: PHASE TRANSFORMATION I

Schedule: 11.00 AM to 1.00 PM

Session Chairman: Prof. S Ranganathan (Past President, IIM)

<b>Keynote Lecture</b>	<b>CK-1</b>	11.00 AM - 11.20 AM	Synthesis of Nanocrystalline and Amorphous Phases in Complex Metallic Alloys by Non-Equilibrium Processing Techniques <i>N.K. Mukhopadhyay</i>
C.I.2.1	CL-8(G-025)	11.20 AM - 11.32 AM	On the Nature of Secondary Aging Behavior in Al- Zn-Mg Alloys <i>Chandan Mondal, A. K. Mukhopadhyay and K.Chattopadhyay</i>
C.I.2.2	CL-9(W-039)	11.32 AM - 11.44 AM	Effect of Thermal Processing on Microstructure and Reliability of Ti-6Al-4V ELI Alloy for Ultrasonic Surgical Blades <i>R. Kumar, G. Mohapatra, Satyam S. Sahay and S. Onukuri</i>
C.I.2.3	CL-10(W-019)	11.44 AM - 11.56 AM	Effect of Ternary $\omega$ -Phase on Deformed Microstructures of Two-Phase Zr-2.5Nb Alloy <i>S. K. Sahoo, V.D. Hiwarkar, L. Jain, I. Samajdar, P. Pant, G. K. Dey, D. Srivastav, R. Tiwari and S. Banerjee</i>
C.I.2.4	CL-11(W-288)	11.56 AM - 12.08 PM	Studying nanostructural Evolution of Precipitates in Al-4 wt. % Cu Alloys using 3-D Local Electrode Atom-Probe (LEAP) Tomography <i>Aniruddha Biswas, Donald J. Siegel and David N. Seidman</i>
C.I.2.5	CL-12(G-211)	12.08 PM - 12.20 PM	Microstructural Variation in Controlled Rolled HSLA Steel <i>Suparna Roy and Debalay Chakrabarti</i>
C.I.2.6	CL-13(G-176)	12.20 PM - 12.32 PM	Mechanical Properties and Microstructural Evolution of Low Carbon Formable Grade Steel (Al-Killed) at JSW Steel, Vijaynagar Works <i>Niranjan Behera, L Naidu, Rajan Singh, BNS Prakash Rao, Sanjay Sharma and G.S. Rathore</i>
C.I.2.7	CL-14(G-264)	12.32 PM - 12.44 PM	Formation of Ultrafine Grained Ferrite During Thermomechanical Treatment in Micro-Alloyed Steel <i>A.N. Bhagat and Neelkant</i>
C.I.2.8	CL-15(W-030)	12.44 PM - 12.56 PM	Effect of Preform Heat Treatments on the Mechanical Properties and Microstructure of Flow Formed AISI 4340 Steel Tubes <i>Bikramjit Podder, Chandan Mondal, Bidyapati Mishra, K. Ramesh Kumar and D.R. Yadav</i>
		12.56 PM - 01.00 PM	Concluding Remarks by the Session Chair

## SESSION C.I.3: PHASE TRANSFORMATION II

Schedule: 4.15 PM to 6.15 PM

Session Chairman: Prof. P. Ramachandra Rao (Past President, IIM)

<b>Keynote Lecture</b>	<b>CK-2</b>	04.15 PM - 04.35 PM	The Shape Memory Alloy Martensite <i>Madangopal Krishnan</i>
C.I.3.1	CL-16(G-305)	04.35 PM - 04.47 PM	Low Cycle Fatigue behavior of Indigenously Developed Reduced Activation Ferritic/Martensitic Steel for Fusion Reactor Applications <i>G.V.Prasad Reddy, R.Sandhya, M.Valsan, K.Laha and K.Bhanu Sankara Rao</i>

C.I.3.2	CL-17(G-225)	04.47 PM - 04.59 PM	Age Hardening of Al-2024 Alloy After CRYO Forming <i>Sasi.B.Bhimavarapu, Amit Kumar Maheshwari, Deepti Bhargava and S.P.Narayan</i>
C.I.3.3	CL-18(W-176)	04.59 PM - 05.11 PM	Application of Genetic Algorithm Optimization In Phase Transitions In BCC System <i>Vikas Jindal and Rahul Garg</i>
C.I.3.4	CL-19(W-143)	05.11 PM - 05.23 PM	Effect of Copper Addition on the Martensitic Transformation and Shape Memory Behavior of Fe-Based Shape Memory Alloys <i>Bikas C. Maji, Meenu Sharma and Madangopal Krishnan</i>
C.I.3.5	CL-20(W-224)	05.23 PM - 05.35 PM	Microstructural Stability of Fully Lamellar - $\gamma$ TiAl Based Alloy under Creep Conditions <i>R. Prasath Babu and S. Karthikeyan</i>
C.I.3.6	CL-21(G-158)	05.35 PM - 05.47 PM	Structure and Properties of a Low Carbon Microalloyed Ultra High Strength Steel <i>P. S. Bandyopadhyay, S. Kundu, S. K. Ghosh and S. Chatterjee</i>
C.I.3.7	CL-22(G-146)	05.47 PM - 05.59 PM	Microstructural Refinement of Cu-40% Zn Alloy by Friction Stir Processing <i>A.G. Rao, B.R.K. Rao, V.P. Deshmukh, A.K. Shah, B.P. Kashyap and N. Prabhu</i>
C.I.3.8	CL-23(W-033)	05.59 PM - 06.11 PM	Recrystallization Kinetics of a TWIP Steel: Interface velocity and Driving Force <i>G. Mohapatra and Satyam S. Sahay</i>
		06.11 PM - 06.15 PM	Concluding Remarks by the Session Chair

## DAY 2; November 17, 2009; TUESDAY

### SESSION C.II.1: TEXTURE EVOLUTION

Schedule: 8.45 AM to 10.45 AM

Session Chairman: Dr. A. K. Gupta (AMPRI, Bhopal)

<b>Keynote Lecture</b>	<b>CK-3</b>	8.45 AM - 9.05 AM	Crystallographic Texture- a Tool for Investigating the Deformation Behavior of Materials <i>Sandip Ghosh Chowdhury</i>
C.II.1.1	CL-24(W-012)	9.05 AM - 9.17 AM	Slip and Anisotropy: Learning through Experiments and Modelling for AA6xxx Sheets <i>M. Ghosh, A. Miroux and L. Kestens</i>
C.II.1.2	CL-25(W-029)	9.17 AM - 9.29 AM	Recrystallization Texture of Pure Ni Deformed to Ultra-High Strain Level by Accumulative Roll Bonding <i>P.P. Bhattacharjee and N. Tsuji</i>
C.II.1.3	CL-26(G-066)	9.29 AM - 9.41 AM	Quantitative Characterization of Crystallographic Textures In Zirconium Alloys Using Pole Figure Method <i>S.V.Ramana Rao, Kalpana Itsri, R.K.Mistry and A.V.Ramana Rao</i>
C.II.1.4	CL-27(W-095)	9.41 AM - 9.53 AM	Grain Refined Boron Modified Ti-6Al-4V Alloy: Role of Ti-B Compound in Microstructure and Texture Evolution during Hot Working <i>Shibayan Roy, Satyam Suwas, S. Tamirisakandala, R. Srinivasan and D.B.Miracle</i>
C.II.1.5	CL-28(W-102)	9.53 AM - 10.05 AM	Microstructure and Texture Developments during Recrystallization in Low Carbon Steels <i>R.K. Khatirkar, S. Kumar, S. Nimsarkar, A. Vishwakarma, P. Das, N. Tripathi and N. Thawale</i>

C.II.1.6	CL-29(G-310)	10.05 AM - 10.17 AM	Influence of Annealing Processes on Ultrafine Grain Formation of Heavily Cold Deformed Austenitic Stainless Steel <i>B. Ravi Kumar and S.K. Das</i>
C.II.1.7	CL-30(W-103)	10.17 AM - 10.29 AM	Effect of Rolling Parameters on Structure and Properties of ZM21 Magnesium Alloy <i>M. Thirumurugan, G. Rajaram, S. Kumaran and T. Srinivasa Rao</i>
C.II.1.8	CL-31(W-118)	10.29 AM - 10.41 AM	Study of Deformed Microstructure with Nanoindentation <i>Arijit Lodh, Prita Pant and Indradev Samajdar</i>
		10.41 AM - 10.45 AM	Concluding Remarks by the Session Chair

## SESSION C.II.2: MICROSTRUCTURE - MECHANICAL PROPERTY RELATION I

**Schedule: 11.00 AM to 1.00 PM**

**Session Chairman: Prof. S. K. Roy (IIT Kharagpur)**

<b>Keynote Lecture</b>	<b>CK-4</b>	11.00 AM - 11.20 AM	Synthesis of Nano Composites with Exceptional properties by High Energy Ball Milling <i>B.S. Murty</i>
C.II.2.1	CL-32(G-048)	11.20 AM - 11.32 AM	Effect of Orientation and Frequency on Fatigue Crack Growth Behavior of Turbine Disc of IN 718 Superalloy for Aeroengine Application <i>N. Chittibabu, Kartik Prasad and Vikas Kumar</i>
C.II.2.2	CL-33(W-016)	11.32 AM - 11.44 AM	Grain Boundary Characteristics and Mechanical Properties of a Cold Rolled and Annealed Ferritebainite Dual Phase Steel <i>Chiradeep Ghosh and Pampa Ghosh</i>
C.II.2.3	CL-34(G-103)	11.44 AM - 11.56 AM	Influence of Heat Treatment Variables on Properties and Structure of Austempered Ductile Iron <i>P.K. Bandopadhyay</i>
C.II.2.4	CL-35(G-135)	11.56 AM - 12.08 PM	Prediction of Austenite Grain size in the Presence of Growing Particles in the Weld HAZ of a X-80 Line Pipe Steel <i>Kumkum Banerjee, Michel Perez and Matthias Militzer</i>
C.II.2.5	CL-36(G-145)	12.08 PM - 12.20 PM	Microstructural Optimization and Deformation Behaviour of Ti13Nb13Zr Alloy <i>Akash A K, Nilesh Gurao and Satyam Suwas</i>
C.II.2.6	CL-37(W-184)	12.20 PM - 12.32 PM	Cenosphere Preform Through Vacuum Moulding Technique and It's Characterization <i>D. P. Mondal, S. Das, Ansul Badkul and Nidhi Jha</i>
C.II.2.7	CL-38(G-060)	12.32 PM - 12.44 PM	Characterization of Anisotropic Mechanical Properties of Pressure Tube Material using Miniature Tensile Specimens <i>R. S. Shriwastaw, K. S. Balakrishnan, B. N. Rath, Sunil Kumar, E. Ramadasan, S. Anantharaman and J. K. Chakravarty</i>
C.II.2.8	CL-39(G-047)	12.44 PM - 12.56 PM	Comparison of High Cycle Fatigue Behaviour of Cast Magnesium AZ91 Alloys Subjected to Transverse Load <i>G.Murugan, K.Raghukandan, U.T.S.Pillai and B.C.Pai</i>
		12.56 PM - 01.00 PM	Concluding Remarks by the Session Chair

## SESSION C.II.3: MICROSTRUCTURE - MECHANICAL PROPERTY RELATION II

**Schedule: 2.00 PM to 4.00 PM**

**Session Chairman: Prof. N. R. Bandyopadhyay (BESU, Howrah)**

<b>Keynote Lecture</b>	<b>CK-5</b>	02.00 PM - 02.20 PM	Developments in the Area of Alloys for Special Applications and Microstructural Characterization Techniques <i>G. K. Dey</i>
C.II.3.1	CL-40(W-065)	02.20 PM - 02.32 PM	Characterization Of Heat Treated M250 Grade Maraging Steel Using Nonlinear Ultrasonic Technique <i>A. Viswanath, B.P.C. Rao, S. Mahadevan, T. Jayakumar and Baldev Raj</i>
C.II.3.2	CL-41(W-156)	02.32 PM - 02.44 PM	Influence of Trace Impurities (Fe And Ni) on Creep Behavior of Commercially Pure Ti <i>Sukumar G, Nandy T, Sankaran S and Ravi Sankar Kottada</i>
C.II.3.3	CL-42(W-158)	02.44 PM - 02.56 PM	Influence of Initial Microstructure on Fracture Behavior of Alloy 718 <i>Sachin Nalawade, Amit Verma, M. Sundararaman, R. Kishore, J. B. Singh and J. G. Shah</i>
C.II.3.4	CL-43(G-150)	02.56 PM - 03.08 PM	Microstructural Evolution and Mechanical Properties of Al65Cu20Ti15Amorphous / nanocrystalline Composite Prepared by Hot Isostatic Pressing <i>D. Roy, O.A Ojo, W. Lojkowski, R. Mitra and I. Manna</i>
C.II.3.5	CL-44(W-041)	03.08 PM - 03.20 PM	Asymmetric Cyclic Plastic Behavior in SA 333 Steel under True Stress Control <i>Surajit Kumar Paul, S. Sivaprasad, S. Dhar and S.Tarafder</i>
C.II.3.6	CL-45(G-095)	03.20 PM - 03.32 PM	Structure-property Correlations in some Nuclear Materials and Engineering Components <i>Vaidehi Ganesan</i>
C.II.3.7	CL-46(W-082)	03.32 PM - 03.44 PM	A Phase Field Model of a Polycrystal with Cavities <i>R. Mukherjee and T. A. Abinandanan</i>
C.II.3.8	CL-47(G-226)	03.44 PM - 03.56 PM	An Investigation on Ductile to Brittle Transition Temperature of Different Steels <i>Deepti Bhargava, Amit Kumar Maheshwari, Sasi.B.Bhimavarapu and S.P.Narayan</i>
		03.56 PM - 04.00 PM	Concluding Remarks by the Session Chair

## SYMPOSIUM C: T R ANANTHARAMAN MEMORIAL SYMPOSIUM ON STRUCTURE - PROPERTY CORRELATION

### POSTER PRESENTATION

Serial Number	Abstract Number	Paper Title and Authors
1.	CP-1(G-021)	Effect of Stress Triaxiality on Creep Behavior of a Near $\alpha$ Titanium Alloy TIMETAL 834 <i>C.M.Omprakash, B.Srivathsa and D.V.V.Satyanarayana</i>

2. CP-2(G- 031) Mechanical Properties of Tin Based Lead Free Solders  
*S.Devaki Rani, G.S. Murthy, N.B.R. Mohan Rao and V.V.B. Subrahmanyam*
3. CP-3(G-034) Cyclic Damage Assessment In Near Alpha IMI-834 Titanium Alloy using Damage Mechanics Approach  
*Jalaj Kumar, Kartik Prasad and Vikas Kumar*
4. CP-4(G-039) Phase Transformation Kinetics in Ti - 4.4 wt. % Ta - 1.8 wt. % Nb Alloy using Differential Scanning Calorimetry  
*Madhusmita Behera, B. Jeya Ganesh, R. Mythili, S. Raju and S. Saroja*
5. CP-5(G-051) Determination of Plane-Strain Fracture Toughness of Structural Materials Using A Circumferentially Cracked Specimen  
*Neelakantha.V.Londe, T.Jayaraju and P.R.Sadananda Rao*
6. CP-6(G-057) Effect of Boron and Carbon on  $\beta$  Ti Alloy Composite  
*R. Sarkar, P. Ghosal, A. Bhattacharjee, T.K. Nandy and K.K. Ray*
7. CP-7(G-070) Three Dimensional Microstructural Characterization of Materials using Dual Beam Scanning Electron Microscope  
*Sabyasachi Saha, K. Muraleedharan and R.Balamuralikrishnan*
8. CP-8(G-071) Room Temperature Ageing Behaviour of Al-based Metallic Glasses  
*Rina Sahu, S. Chatterjee and K.L. Sahoo*
9. CP-9(G-073) Structure-Property Co-Relation of an Orthorhombic Aluminide Alloy  
*Sanjeev Kumar, T K Nandy, Ashok Kumar, N prasad and V K Varma*
10. CP-10(G-079) TEM Characterisation of Nanocomposite TaN/Cu Thin Films  
*Shabana Khan, T. Elangovan, P. Kuppasami, Akash Singh, Divakar Ramachandran, E. Mohandas and D. Mangalaraj*
11. CP-11(G-086) A Study on the Correlation of Severe Wear Behavior with Subsurface Characteristics of Die Steel  
*Srijan Acharya, Arka Lahiri and Debdulal Das*
12. CP-12(G-087) Effect of Copper on the Austempering Behaviour of Ductile Iron  
*S. Sen, S. C. Mishra and S.Sarkar*
13. CP-13(G-094) Effect of Trace Boron Addition on Microstructure and Mechanical Properties of Near  $\alpha$  Titanium Alloy  
*V. Chandravanshi, R. Sarkar, P. Ghosal, S. Kamat and T. K. Nandy*
14. CP-14(G-111) Development of High Strength Rockbolt  
*D. Karmakar, P.P. Sengupta, S. Sen, P.K. Maini, B.K. Jha, S.K. Chaudhuri, P.K. Sinha, Avtar Singh, P. Sarkar, R.C. Saha, A.K. Singh and H.S. Sangha*
15. CP-15(G-113) Development of API X 70 Grade Thick HR Coils  
*Santosh Kumar, B.K. Jha, S.K. De, S. Mukhopadhyay, R. Datta, S.K. Chaudhuri, S. Mallik, A.K. Singh, A. Prakash, S.K. Sinha, M.M.S. Sodhi and K.N. Changder*
16. CP-16(G-126) Grain Boundary Engineering in Austenitic Stainless Steel for the Improvement of Sensitization Resistance  
*Sukumar Kundu, Arpan Das, Raghuvir Singh, Swapan K Das and Sandip Ghosh Chowdhury*
17. CP-17(G-138) Effect of Scandium on Precipitation Behavior of Al-Mg-Cr Alloy  
*A. Patra, S. Datta and P. P. Chattopadhyay*
18. CP-18(G-139) Nano-Mechanical Characterization of Ni-Ti Alloy  
*A. Sinha, S. Datta and P. P. Chattopadhyay*
19. CP-19(G-140) Effect of Mn on Mechanical Alloying of Cu-Fe-Co Magnetic Alloys  
*B.N. Mondal, A. Basumallick and P. P. Chattopadhyay*
20. CP-21(G-142) Development of Low Carbon High Strength Bainitic Steels  
*N. Bhowmik, S. Ganguli, A.Haldar and P. P. Chattopadhyay*

21. CP-22(G-144) Effects of Cu Addition on the Synergistic Effects of Ti - B Steels  
*S. K. Ghosh, A. Haldar and P. P. Chattopadhyay*
22. CP-23(G- 260) Mechanical Properties of Nano-Y<sub>2</sub>O<sub>3</sub> Dispersed Ferritic Steel Developed by Mechanical Alloying and High Pressure Sintering  
*S.K.Karak, T.Chudoba, Z.Witczak, W.Lojkowski, L. Ciupinski, K.J. Kurzydowski and I.Manna*
23. CP-24(W-002) Influence of Deep Zero Treatment on the Stability of Needle Bearings (SAE 52100) and its Wear Resistance  
*Janhavi V. Dandawate*
24. CP-25(W-003) Designing of Heat Treatment Cycle for M3/2 Valve Seat Insert  
*N.B.Dhokey, Nazia A. Patel and Sumaiyya K.Madki*
25. CP-26(W-004) Microstructural Evolution during Tensile Deformation of Two Materials with significantly Different Stacking Fault Energy  
*Saurabh Makhariya*
26. CP-27(W-015) Studies on Cold Workability Limits of AA 2024 Al-Cu Alloy  
*R.Srinivasu, D J Catherina, Ch.Venkata Rao and J. Babu Rao*
27. CP-28(W-017) Study of Inclusions in a Few Interstitial Free (IF) and Interstitial Free High Strength (IFHS) Steels  
*Pampa Ghosh, Nitish Kumar and Chiradeep Ghosh*
28. CP-29(W-022) Effect of Nano-Copper Precipitation on Fracture Behaviour of High Strength Low Alloy Steel  
*S.K. Das, S. Chatterjee and S. Tarafder*
29. CP-30(W-031) Improvement of Creep Resistance of P91 Steel by Boron Addition  
*C.R.Das, S.K.Albert, A.K.Bhaduri and B.S.Murty*
30. CP-31(W-036) Characterization of Metallic Card Clothing Wires  
*J.Chakraborty, Nilotpal Dey and I Chakrabarti*
31. CP-32(W-040) First Principles Study of Structural Stability and Planar Fault Energy of Ordered Ni<sub>3</sub>(Al,Ti)  
*K. V. Vamsi and S. Karthikeyan*
32. CP-33(W-044) Microstructure Evolution during ( $\alpha+\beta$ )-Rolling of Boron Modified Titanium Alloy  
*Vedavyas Tungala, Shibayan Roy and Satyam Suwas*
33. CP-34(W-047) Effect of Heat Treatment on Carbide Morphology in 21-4-N Steel  
*Aniruddha A. Gadhikar, C.P. Sharma, Ashok Sharma and D.B. Goel*
34. CP-35(W-055) Investigation of Thermal Conductivity of B - Si<sub>3</sub>N<sub>4</sub> Using Object Oriented Finite Element Programming  
*R. Ramakrishnan, B. Matovic and Ravi Kumar*
35. CP-36(W-234) Effect of Processing Parameters on the Microstructure of HSLA Steel  
*Suparna Roy, Sudipto Patra and Debalay Chakrabarti*
36. CP-37(W-063) Grain Refinement during Annealing of a Severely Plastically Deformed Ti-Ta-Nb Alloy  
*Arup Dasgupta, Pradyumna Kumar Parida, S. Saroja and M. Vijayalakshmi*
37. CP-38(W-074) Porosity of Aggregates with Respect to Particle size, Shape and Proportion  
*Ranjit Prasad, Sushma Ekka, S. Ranganathan and K. M. Godiwalla*
38. CP-39(W-084) Microstructural Study of Austempered Inoculated Low Carbon Equivalent irons  
*Mangesh Diware, Ajay Likhite, D.R. Peshwe and S.U. Pathak*
39. CP-41(W-131) Alloy Conservation through Precipitation Strengthening by Microalloy Additions in Steels for Automotive Applications  
*K R Srinivasan, Amit Ganguly, Sunil Nair and Niranjan More*
40. CP-42(W-134) A Model for Prediction of Time-Temperature-Sensitization (TTS) Behaviour of Austenitic Stainless Steels  
*M.K. Samal*

41. CP-43(W-138) Deformation-induced Phase Transformation in Fe-Ni-Cr based Alloy 800  
*R.S.Dutta, U.Savitha, R.Tewari, S.V.Mulki, I.Samajdar and G.K.Dey*
42. CP-44(W-139) Correlation between Local Misorientation and Local Strain  
*S. Mukherjee, A. Majumdar, S.K.Mishra, K. Narasimhan, P. Pant and I. Samajdar*
43. CP-45(W-140) Martensite Microstructure of Off-Stoichiometric Ni<sub>55</sub>Fe<sub>19</sub>Ga<sub>26</sub> Alloy  
*Amita Gupta, Aniruddha Biswas, Pallavi Sontakke and Madangopal Krishnan*
44. CP-46(W-142) Correlation of Aging Parameters with Mechanical and Electrical Properties of Al 7010 Alloy  
*Yogesh Y. Mahajan, Manini P.Tidke and D.R.Peshwe and R.K.Paretkar*
45. CP-47(W-147) Influence of Ageing at 400°C on Tensile Properties of Zr-2.5Nb Pressure Tube Alloy  
*Snehanshu Rai, Kumar Navin, R. N. Singh and J. K. Chakravarty*
46. CP-48(W-149) Effect of Bainite Tempering on the Mechanical Properties of a High Strength Steel  
*P. Maji, A. Das, A. Verma and K. K. Ray*
47. CP-49(W-150) Tensile Properties of Heat-Treated Zr-2.5Nb Alloy at 25 & 300°C  
*Kumar Navin, Snehanshu Rai, R. N. Singh and J. K. Chakravarty*
48. CP-50(W151) Influence of Specimen Orientation on Superplasticity in Zr-2.5Nb Alloy at 700°C  
*P. Srinivas, S. S. Pandey, R. N. Singh, J. K. Chakravarty and B. P. Kashyap*
49. CP-51(W-164) Influence of Bainite Content on Short Crack Fatigue Threshold in 1.08Cr-0.26Mo Ferrite-Bainite Dual-Phase Steels  
*Ashok Kumar, S.B.Singh and K.K.Ray*
50. CP-52(W-166) Dislocation Dynamics Simulations for HCP Systems  
*K V Mani Krishna, P Panth, I Samajdar, D Srivastava and G K Dey*
51. CP-53(W-172) Focused Ion Beam (FIB) Machining for Site-specific 3-D Local Electrode Atom Probe (LEAP) Tomography of a Commercial Aluminium Alloy W319  
*Aniruddha Biswas, Praneet Adusumilli and David N. Seidman*
52. CP-54(W-173) 3-D Atom-Probe Tomographic Study of the Compositional Evolution of  $\theta'$  and Q-phase Precipitates in a Commercial Age-Hardenable Al-Alloy W319  
*Aniruddha Biswas, Donald J. Siegel and David N. Seidman*
53. CP-55(W-181) Studies on Non-equilibrium Pearlite  
*Abhishek Kumar and Jagannath Nayak*
54. CP-56(W-187) Microstructure Evolution of High Manganese TRIP/TWIP Steels During Cold Rolling  
*Sumant Giri and Soumendu Chakravarty*
55. CP-57(W-190) Friction Stir Processing of AZ80 Magnesium Alloy and Concurrent Changes in Microstructure and Mechanical Properties  
*Pabitra Palai, A. G. Rao, V. P. Deshmukh, N. Prabhu, P D. Hodgeson and B. P. Kashyap*
56. CP-58(W-193) Effect of Process Parameter on Thermal History, Microstructure and Micro-hardness of Aluminum Alloy due to Friction Stir Welding  
*Pankaj Biswas, Atanu Paul, N. R. Mandal and P. K. Ghosh*
57. CP-59(W-215) Refinement of Bainitic Sheaves Dispersed with Martensite Matrix in High Carbon/Low Silicon Steels for Ball Bearing Applications  
*Jayanta Chakraborty*
58. CP-60(G-163) Structural and Microhardness Evolution of Amorphous Cu<sub>60</sub>Zr<sub>14</sub>Ti<sub>26</sub> Ribbons with Crystallization  
*Ansu J. Kailath, B. Mahato and Gautam Das*
59. CP-62(G-206) Behavior of 2¼ Cr-Mo-V Steel with Variable Alloying Element Range and Treatment Conditions  
*Kishore Reddy, Rajesh Raut and T.Venkatramana*

- 
60. CP-63(G-212) Effect of Aluminum-Titanium-Boron Based Grain Refiners on AZ91E Magnesium Alloy  
*A. Elsayed, B.S. Murty and C. Ravindran*
61. CP-64(G-234) Study on Micro Structural and Mechanical Properties of Al-Cu-Mg Alloys Micro Alloyed With Sn in Cast, Annealed and Rolled Conditions  
*Sanjib Banerjee P.S. Robi, A. Srinivasan and Lakavath Praveen Kumar*
62. CP-65(G-237) Microstructural Features and Mechanical Properties of Thermomechanically Treated High Strength Titanium Alloy  
*Riddhiman Bhattacharya and Lothar Wagner*
63. CP-66(G238) Impact of Microstructure on Property Variation along the Length of TMT Rebars  
*Uddalok Banerjee, T.Venugopalan, Biswajit Ghosh*
64. CP-70(G-262) Microstructural Optimization in High Silicon Austempered Bearing Steel  
*Madhumanti Bhattacharyya, Jayanta Chakrabarty and I.Manna*
65. CP-71(G-267) Formation of Ag Solid Solution and Reappearance of Ag<sub>4</sub>Sn Phase in Ag 15 at % Sn during Mechanically Milling  
*S. Chithra and K. Chattopadhyay*
66. CP-72(W-210) Influence of Heat-Treatment on Tensile flow Behavior of Zr-2.5Nb Alloy  
*A. K. Bind, R. N. Singh, D. K. Shukla and J. K. Chakravarty*
67. CP-73(W-212) Measurement of Interlamellar Spacings in Pearlitic Grade Steel Wires/Wire Rods by Eddy Current  
*J. C. Pandey, Manish Raj, Vikram Sharma and N. Bandyopadhyay*
68. CP-74(W-214) A Study on TMT Rebars with Couplers  
*Jayanta Chakraborty*
69. CP-75(W-227) Measurement of Fractal Dimensions from an Aluminum Fractograph using MATLAB  
*V.Raghu Prakash and G.Karthik*
70. CP-76(W-233) Characterization of Materials and Components  
*Jitendra kumar Singh*
71. CP-77(G-286) Effect of Boron on the Microstructure and Mechanical Properties of Cast Ti-6Al-4V Alloy  
*U. Sai Babu, Agrawal Priyanka and S. Karthikeyan*
72. CP-78(G-125) Self-annealing and Evolution of Microstructure and Texture in Silver Processed by Equal Channel Angular Pressing (ECAP) after Room Temperature Ageing  
*Sandip Ghosh Chowdhury, J. Gubicza, B.Mahato, N.Q. Chinh and T.G. Langdon*

# SYMPOSIUM D: ADVANCED AND STRATEGIC MATERIALS TECHNOLOGY

**VENUE: HALL D**

**CONVENOR: Professor S. Das**

**DAY 1; November 16, 2009; MONDAY**

## SESSION: D.I.1 STRATEGIC MATERIALS I

**Schedule: 8.45 AM to 10.45 AM**

**Session Chairman: Mr. A. C. Wadhawan (Past President, IIM)**

Session and Serial	Abstract Number	Schedule	Paper Title and Authors
		8.45 AM - 8.50 AM	Introduction to symposium D <i>by Mr. A. C. Wadhawan (session chairman)</i>
<b>Award Lectures</b>	<b>NMD-7</b>	8.50 AM - 9.05 AM	Role of Microstructure in Building Dense Parts <i>Anish Upadhyaya</i>
	<b>NMD-8</b>	9.05 AM - 9.20 AM	Thermo-mechanical Processing of a Ti-modified Austenitic Stainless Steel: Aspects of Evolution, Characterization and Modification of Microstructure <i>Sumantra Mandal</i>
D.I.1.1	DL-1(W-013)	9.21 AM - 9.33 AM	Measurement of Relative Sticking Coefficient for Nitrogen on Ti and Al in a Magnetron Sputtering System <i>Kulwant Singh, Pallabi Patnaik, Deep K. Bhaisare, Jagannath, A. C. Bidaye and A. K. Suri</i>
D.I.1.2	DL-2(G-015)	9.33 AM - 9.45 AM	A Differential Scanning Calorimetry Study of Phase Transformation Characteristics in 100 Mass ppm Boron Added Modified 9Cr 1Mo Steel <i>B. Jeya Ganesh, S. Raju, Arun Kumar Rai, E. Mohandas and M. Vijayalakshmi</i>
D.I.1.3	DL-3(G-035)	9.45 AM - 9.57 AM	Ultra Low Density High Energy Absorbing Aluminium Based Foams <i>Amol A. Gokhale, R. Rajendran, G. Balachandran, S.N. Sahu, N.V. Ravi Kumar, B. Sudhakar and N. Ramachandra Rao</i>
D.I.1.4	DL-4(G-037)	9.57 AM - 10.09 AM	Tungsten Heavy Alloys: Microanalysis and Mechanical Properties <i>Jiten Das, A Chakraborty, G Appa Rao and S K Pabi</i>
D.I.1.5	DL-5(W-038)	10.09 AM - 10.21 AM	Study of Microstructure in D9 Alloy using TEM and XRD Techniques <i>M. Bhattacharya, A. Sarkar, P. Mukherjee, P. S. Chowdhury, N. Gayathri and P. Barat</i>
D.I.1.6	DL-6(G-043)	10.21 AM - 10.33 AM	Determination of Tensile Properties of Free Standing Pt-Aluminide Bond Coats by Microtensile Testing <i>Md. Zafir Alam, B. Srivathsa, S. V. Kamat, N. Hazari, V. Jayaram and D. K. Das</i>
D.I.1.7	DL-7(G-064)	10.33 AM - 10.45 AM	Development of a Copper Containing Three Phase Titanium Alloy <i>S. Gollapudi, U. Chinta Babu, T. K. Nandy and A. K. Gogia</i>

**SESSION: D.I.2 STRATEGIC MATERIALS II**  
**Schedule: 11.00 AM to 1.00 PM**  
**Session Chairman: Dr. K. Bhanu Sankar Rao (IGCAR)**

<b>Keynote Lecture</b>	<b>DK-1</b>	11.00 AM - 11.20 AM	Indigenous Development of Advanced Glasses and Ceramics: A Few Case Studies <i>H. S. Maiti</i>
D.I.2.1	DL-8(G-133)	11.20 AM - 11.32 AM	Processing of Enriched (B10) Boron <i>Ashish Jain, S. Anthonysamy, K. Ananthasivan, G. S. Gupta and V. Ganesan</i>
D.I.2.2	DL-9(W-201)	11.32 AM - 11.44 AM	Application of Electrophoretic Deposition (EPD) for Fabrication of Anode-supported Solid Oxide Fuel Cells (SOFC) <i>Laxmidhar Besra</i>
D.I.2.3	DL-10(W-228)	11.44 AM - 11.56 AM	Effect of Zr Addition on Amorphous Phase Forming Ability of Nickel Aluminium Bronze Alloys <i>B. Ramakrishna Rao, A. K. Shah, Jatin Bhatt, A. S. Gandhi and B. S. Murty</i>
D.I.2.4	DL-11(G-239)	11.56 AM - 12.08 PM	Sintering Characteristics of Mechanically Alloyed Al-Ni-Ti Amorphous Powder Consolidated by Pressure-less, pressure-Assisted and Spark Plasma Sintering <i>Suhrit Mula, Sudipto Ghosh and Shyamal K. Pabi</i>
D.I.2.5	DL-12(G-266)	12.08 PM - 12.20 PM	Preparation of Nano-Crystalline Fe-Cr Alloy by High Energy Ball Milling <i>K. Jayasankar, Siddhartha Das and B. K. Mishra</i>
D.I.2.6	DL-13(G-044)	12.20 PM - 12.32 PM	Effect of Thermal History on Phase Stability and Magnetostriction of Fe-Ga Alloys <i>Mithun Palit, Himalay Basumatary, J. Arout Chelvane, S. Pandian, V. Chandrasekaran and K. Chattopadhyay</i>
D.I.2.7	DL-14(G-250)	12.32 PM - 12.44 PM	Study on Preparation and Hydrogen Solubility in LaNi <sub>5</sub> <i>Sanjay Kumar and Alok Awasthi</i>
D.I.2.8	DL-15(W-223)	12.44 PM - 12.56 PM	One Pot Synthesis of Nickel Nanoflower using Silver Catalyst <i>Sampita Senapati, S. B. Singh, Koushik Biswas</i>
		12.56 PM - 01.00 PM	Concluding Remarks by the Session Chair

**SESSION: D.I.3 NANOSTRUCTURED MATERIALS AND NANOTECHNOLOGY**  
**Schedule: 4.15 PM to 6.15 PM**  
**Session Chairman: Prof. M. K. Mitra (JU, Kolkata)**

<b>Keynote Lecture</b>	<b>DK-2</b>	04.15 PM - 04.35 PM	Magnetic Liposomes/Suspension for Cancer Therapy <i>D. Bahadur</i>
D.I.3.1	DL-16(W-037)	04.35 PM - 04.47 PM	Synthesis of Bulk Nanostructured and Amorphous Al-Mg Alloys by Mechanical Milling and Spark Plasma Sintering <i>D. Mukherjee, R. Manna, B. Basua, K. Madhav Reddy and N. K. Mukhopadhyay</i>
D.I.3.2	DL-17(W-048)	04.47 PM - 04.59 PM	Enhancement of Heat Transfer during Quenching using Nanofluids <i>K. Babu and T. S. Prasanna Kumar</i>

D.I.3.3	DL-18(W-167)	04.59 PM - 05.11 PM	Determination of Thermo-physical Properties of Nano-Au/Nano-Ag Dispersed Nanofluids Synthesized by Chemical Precipitation Method <i>G. Paul, T. Pal, P. K. Das and I. Manna</i>
D.I.3.4	DL-19(W-199)	05.11 PM - 05.23 PM	Synthesis and Characterization of Nanocrystalline Tungsten Alloyed with Molybdenum using High Energy Ball Milling <i>Ajeet K. Srivastav, Bijoy Sarma and B. S. Murty</i>
D.I.3.5	DL-20(W-189)	05.23 PM - 05.35 PM	Synthesis and Characterization of Al-Si Metal Matrix Composite Reinforced with In situ Alumina Particulates by Displacement Reaction <i>Ashutosh Sharma, S. Toor, K. Das and S. Das</i>
D.I.3.6	DL-21(G-124)	05.35 PM - 05.47 PM	X-ray Line Broadening Analysis of ZnO Nanocrystals Synthesized by Thermal Plasma <i>J. Chakraborty, A. S. Prasad and G. Prasad</i>
D.I.3.7	DL-22(G-252)	05.47 PM - 05.59 PM	Carbon Nanotube Reinforced Al Nanocomposites Synthesized by Spark Plasma Sintering <i>Lakshmikanth Reddy M, Anway Maiti and Tapas Laha</i>
D.I.3.8	DL-23(G-180)	05.59 PM - 06.11 PM	Synthesis of Graphene Nanocomposite <i>A. Gandhi, S. Banerjee, G. C. Das, S. Mukherjee and M. K. Mitra</i>
		06.11 PM - 06.15 PM	Concluding Remarks by the Session Chair

## DAY 2; November 17, 2009; TUESDAY

### SESSION D.II.1: COMPOSITE AND BIOMATERIALS I

Schedule: 8.45 AM to 10.45 AM

Session Chairman: Prof. H. S. Ray (Ex-Professor, IIT Kharagpur)

<b>Keynote Lecture</b>	<b>DK-3</b>	8.45 AM - 9.05 AM	Plastic Deformation and Fracture in BMGs: Recent Experimental and Simulation Results <i>Upadrasta Ramamurty</i>
D.II.1.1	DL-24(W-090)	9.05 AM - 9.17 AM	Microstructure and Mechanical Properties of Pressureless Sintered ZrB <sub>2</sub> based Ultra High Temperature Ceramic Composites <i>Manab Mallik, R. Mitra and K. K. Ray</i>
D.II.1.2	DL-25(G-227)	9.17 AM - 9.29 AM	Fabrication of In situ Mg-TiC Composite by Mechanically Activated Self Propagating High Temperature Synthesis Process <i>A. K. Chaubey, B. K. Mishra, N. K. Mukhopadhyay and P. S. Mukherjee</i>
D.II.1.3	DL-26(W-071)	9.29 AM - 9.41 AM	Synthesis and Characterization of Bulk Metallic Glasses and Composites <i>B. Vishwandh, Suhani Mohan, R. Tewari and G. K. Dey</i>
D.II.1.4	DL-27(W-108)	9.41 AM - 9.53 AM	Preparation and Characterization of Poly (Butylene Terephthalate) /Mica Composites <i>G. S. Deshmukh, S. U. Pathak, D. R. Peshwe and J. D. Ekhe</i>
D.II.1.5	DL-28(W-001)	9.53 AM - 10.05 AM	A Microanalysis Understanding on Failure and Fracture of Composite Materials <i>B. C. Ray</i>
D.II.1.6	DL-29(W-165)	10.05 AM - 10.17 AM	Thermal Stability of Pulse Electrodeposited Ni/CeO <sub>2</sub> Nanocomposite <i>Ranjan Sen, Siddhartha Das and Karabi Das</i>

D.II.1.7	DL-30(W-170)	10.17 AM - 10.29 AM	Preparation of SiC Dispersed Al <sub>2</sub> O <sub>3</sub> Ceramic Composites and Studies their Fracture Toughness <i>Kuntal Maiti and Anjan Sil</i>
D.II.1.8	DL-31(W-005)	10.29 AM - 10.41 AM	Extrusion of 7075 Al-Based Hard Particle Composites <i>Rupa Dasgupta, A. K. Jha, S. Chaturvedi, S. Dikshit and S. Das</i>
		10.41 AM - 10.45 AM	Concluding Remarks by the Session Chair

## SESSION D.II.2: COMPOSITE AND BIOMATERIALS II

Schedule: 11.00 AM to 1.00 PM

Session Chairman: Prof. S. C. Panigrahi (IIT Kharagpur)

<b>Keynote Lecture</b>	<b>DK-4</b>	11.00 AM - 11.20 AM	Synthesis and Characterization of In-situ TiC/ZrC/TiB <sub>2</sub> - Reinforced Iron Matrix Composites <i>Karabi Das</i>
D.II.2.1	DL-32(G-072)	11.20 AM - 11.32 AM	Effect of Grain Refinement by Groove Pressing on Bioactivity Enhancement of Titanium Sheets <i>A. Thirugnanam, T. S. Sampath Kumar and Uday Chakkingal</i>
D.II.2.2	DL-33(G-131)	11.32 AM - 11.44 AM	Apatite-forming Ability and Hydrothermal Treatment at 134°C in Simulated Body Fluid of Ceria Stabilized Zirconia <i>Ajoy Kumar Pandey and Koushik Biswas</i>
D.II.2.3	DL-34(W-205)	11.44 AM - 11.56 AM	Preparation and Bioactivity Evaluation of Bone Like Hydroxyapatite-Bioglass Composite <i>Uma Batra and J. D. Sharma</i>
D.II.2.4	DL-35(W-225)	11.56 AM - 12.08 PM	Development of Bio-Nano-Composite for Bone Replacement Implants <i>Karthik V, S. K. Pabi and S. K. Roy Chowdhury</i>
D.II.2.5	DL-36(W-154)	12.08 PM - 12.20 PM	Comparative Study of Aluminum - Alumina Composite Prepared by Mechanical Mixing and Oxidation <i>J. K. Mahato and A. K. Pramanick</i>
D.II.2.6	DL-37(W-257)	12.20 PM - 12.32 PM	Tribological Properties of CeO <sub>2</sub> Particle Reinforced Copper Matrix Nanocomposites for Electrical Applications <i>Sumit Bhattacharya, Venu Mangam, Karabi Das and Siddhartha Das</i>
D.II.2.7	DL-38(G-284)	12.32 PM - 12.44 PM	Use of Composite Roll in Finishing Stand of LMMM Bar Mill of VSP <i>U. S. Singh and S. K. Nayak</i>
D.II.2.8	DL-39(G-251)	12.44 PM - 12.56 PM	Synthesis, Sintering and Mechanical Properties of Ytria Stabilized Zirconia Toughened Alumina Bioceramic <i>I. Sharma, A. Pandey and K. Biswas</i>
		12.56 PM - 01.00 PM	Concluding Remarks by the Session Chair

## SESSION: D.II.3 CERAMIC, ELECTRONIC AND MAGNETIC MATERIALS

Schedule: 2.00 PM to 4.00 PM

Session Chairman: Dr. D. K. Bhattacharjee (CGCRI, Kolkata)

<b>Keynote Lecture</b>	<b>DK-5</b>	02.00 PM - 02.20 PM	Advanced and Strategic Aluminium Alloys for Aerospace and Defence Applications <i>A. K. Mukhopadhyay</i>
D.II.3.1	DL-40(G-024)	02.20 PM - 02.32 PM	HRTEM Investigation of Phase Stability in Alumina-Zirconia Multilayers <i>Chanchal Ghosh, G. Balakrishnan, Divakar Ramachandran, P. Kuppasami, E. Mohandas and D. Sastikumar</i>
D.II.3.2	DL-41(W-152)	02.32 PM - 02.44 PM	Molten Salt Attack on Yttria and Ytterbia Stabilised Zirconia for Thermal Barrier Application <i>Prahlad Kumar, Narender Reddy, K. C. Hari Kumar and Ashutosh S. Gandhi</i>
D.II.3.3	DL-42(W-204)	02.44 PM - 02.56 PM	Photoemission Spectroscopy and ab initio Study of the Electronic Structure in $\text{SrRu}_{1-x}\text{Mn}_x\text{O}_3$ <i>Ranjan K. Sahu and L. C. Pathak</i>
D.II.3.4	DL-43(G-030)	02.56 PM - 03.08 PM	Magnetic and Electrical Properties of $\text{Eu}^{3+}$ Doped $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$ Nanoceramics <i>D. De, S. Ram and S. K. Roy</i>
D.II.3.5	DL-44(G-194)	03.08 PM - 03.20 PM	Synthesis of Aluminium Nitride by Microwave Assisted Carbothermic Method <i>S. Angappan, V. Sridevi, L. John Berchmens and A. Visuvasam</i>
D.II.3.6	DL-45(G-273)	03.20 PM - 03.32 PM	Microstructure and Magnetic Properties of Rapidly Solidified NiFeGa and CoNiGa Ferromagnetic Heusler Alloys: Effect of Heat-treatment and Al Addition <i>S. Aich</i>
D.II.3.7	DL-46(W-127)	03.32 PM - 03.44 PM	Effect of Substrate Bias and Annealing on Structure, Roughness and Residual Stress of RF Magnetron Sputtered Ti Thin Films on Si Substrate <i>Arindom Bardhan, R. Mitra and M. Chakraborty</i>
D.II.3.8	DL-47(G-279)	03.44 PM - 03.56 PM	Meso Patterning of Thin Sol-Gel Films by Capillary Force Lithography <i>Rabibrata Mukherjee, Rimlee Deb Roy, Devika Sil, Sunirmal Jana, Kamal Dasgupta, Shyamal K Bhadra and Prasanta K. Biswas</i>
		03.56 PM - 04.00 PM	Concluding Remarks by the Session Chair

## SYMPOSIUM D: ADVANCED AND STRATEGIC MATERIALS TECHNOLOGY

### POSTER PRESENTATION

Serial Number	Abstract Number	Paper Title and Authors
1.	DP-1(G-005)	Development of 30kA Nb-Ti Superconductor Based Hybrid Cable-In-Conduit-Conductor (CICC) <i>A. K. Singh M. M. Hussain and R. P. Singh</i>

2. DP-2(G-007) Development and Concurrent Certification of 15-5 PH Stainless Steel for TEJAS Aircraft  
*Ashok Kumar, Sanjeev Kumar, Y. Balaji, A. V. Reddy and V. K. Varma*
3. DP-3(G-020) Certification of Carbon-Carbon Composite Brake Discs for TEJAS Aircraft  
*B. Jana, B. Saha and Vijay K. Varma*
4. DP-4(G-038) Study of Internal Hardening Variables in a Near  $\alpha$  Titanium alloy Timetal 834  
*Kartik Prasad and Vikas Kumar*
5. DP-5(G-045) Generation of Tensile and Creep Design Curves for High Nitrogen Grades of 316LN Stainless Steel as per RCC-MR Nuclear Code Procedures  
*K. M. Chowdary, R. K. Paretkar and M. D. Mathew*
6. DP-6(G-056) Evaluation of Mechanical Properties of Zircaloy Tubes using Non-standard Specimens  
*Priti K. Shah, M. K. Samal, R. S. Shrivastawa, J. S. Dubey, K. S. Balakrishnan, S. Anantha Raman, R. N. Singh and J. K. Chakravarty*
7. DP-7(G-063) Characterization of the Creep Behavior of Near  $\beta$ -Ti 834: Effect of Fe and Ni  
*S. Gollapudi, D. V. V. Satyanarayana, C. Phaniraj and T. K. Nandy*
8. DP-8(G-100) Synthesis of Mo-30 wt% W Alloy by Mechanical Alloying and its Characterization  
*S. P. Chakraborty, V. S. Bhave and I. G. Sharma*
9. DP-9(G-204) Effect of Ca Doping in  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$   
*Jitendra Kumar Jha, K. Shravana Kumar and T. K. Nath*
10. DP-10(W-006) Equi Channel Angular Pressing [ECAP] For a Mg Alloy  
*Rupa Dasgupta, S. Chaturvedi, M. Sharma and A. K. Jha*
11. DP-11(W-009) Defect Assessment in Composite Materials by Thermal Imaging Technique  
*B. C. Ray*
12. DP-12(W-100) Uranium Thorium Alloy Preparation and Characterization: an in House Effort  
*Santanu Das, Raj Kumar and S. B. Roy*
13. DP-13(W-110) Densification of Refractory Diborides and its Composites  
*J. K. Sonber, T. S. R. Ch. Murthy, C. Subramanian, R. K. Fotedar and A. K. Suri*
14. DP-14(W-119) Characterization of Modified FINEMET Soft Magnetic Metallic Glass by Positron Life Time Spectroscopy  
*A. P. Srivastava, K. Sudarshan, D. Srivastava, G. K. Dey, K. G. Suresh and P. K. Pujari*
15. DP-15(W-113) Thermal Decomposition, Phase Evolution & Morphological Behavior of  $\text{LiTiO}_3$   
*Sanjay Kumar, D. K. Sahoo, R. D. Bedse and S. Ramnathan*
16. DP-16(W-133) Formation  $\text{B}_2\text{-NiAl}$  by Mechanical Alloying  
*N. Das, S. Shukla, A. Londhe, U. D. Kulkarni and G. K. Dey*
17. DP-17(W-025) Effect of Ti, B and Sr on the Microstructure, Mechanical and High Temperature Wear Behavior of A356 Alloy  
*M. S. Prabhudev, T. M. Chandrashekharaiah and S. A. Kori*
18. DP-18(W-146) Design study of Left Handed Metamaterials with Planar Split Ring Resonator (SRR) Geometry  
*Avradeep Pal, R. P. R. C. Aiyar and N. Venkatramani*
19. DP-19(W-175) WikiMicroGraphia - A Web Based Repository of Microstructural and Fractographic Images  
*Mita Tarafder, B. Dash, K.K. Gupta, S. Tarafder, I. Chatteraj and Sapwan K. Das*
20. DP-20(W-213) Effect of Ni and  $\text{Ni-TiB}_2$  on Densification and Mechanical Properties of Titanium using Powder Metallurgy Technique  
*G. Tripathi, A. Upadhyaya, G. B. Schaffer and M. Qian*
21. DP-21(W-010) Nanocrystalline  $\text{CeO}_2$  Powders by High Energy Ball Milling  
*T. P. Yadav, G. Irene Sheeja and O. N. Srivastava*

22. DP-22(W-020) Mechanochemical Coreduction of  $V_2O_5$  and  $TiO_2$  with Al  
*Abhishek Mukherjee and Nagaiyar Krishnamurthy*
23. DP-23(W-023) Solid State Synthesis of Al-based Al-Si-Ni Amorphous and/or Nanostructured Materials  
*S. Mula, P. Sahani and P. S. Mohakud*
24. DP-24(W-043) Microstructure-property Correlation in Nanostructured Fe-Co-Zr-B-Cu Soft Magnetic Alloy Melt-spun at Different Wheel Speeds  
*S D Arvindha Babu, B Majumdar, D Akhtar and V Chandrasekaran*
25. DP-25(G-069) In-Situ Synthesis of Gold Nanofluids with Water  
*Lavin Agrawal, A. Mishra, S. Ram and S. K. Roy*
26. DP-26(W-128) Al - Si - Cu / $Al_2O_3$  In-situ Metal Matrix Composite synthesized by High Energy Ball Milling  
*Sandeep Kumar Toor, Ashutosh Sharma, K. Das and S. Das*
27. DP-27(W-208) Shape Control of Graphene by Catalytic Nanocutting and Transfer  
*Deep Jariwala, Lijie Ci, Li Song, Ana-Laura Elias and P.M.Ajayan*
28. DP-28(G-198) Synthesis and Characterization of Al-SiC Nano Composite  
*Raghuveer Reddy*
29. DP-29(W-226) A MD-Stochastic Model Leading to the Development of a Magnificent Water Based Nanofluid  
*M. M. Ghosh, S. K. Pabi and S. Ghosh*
30. DP-30(G-221) Production of Carbon Nanotubes (CNTs) From Calcined Petroleum Coke (CPC) by Argon Arc plasma Heating Method  
*P. S. Mukherjee, J. L. Gumaste, K. Jayasankar and A. Dash*
31. DP-31(G-258) Corrosion Behavior of Pulse Electrodeposited Cu-CeO<sub>2</sub> Nanocomposites in 3.5 wt% NaCl Solution  
*Venu Mangam, Sumit Bhattacharya, Karabi Das and Siddhartha Das*
32. DP-32(G-259) Influence of Deposition Temperature on the Structural and Morphological Properties of Nano Crystalline SnO<sub>2</sub> Films Fabricated by Pulsed Laser Deposition  
*S K Sinha, S K Ray and I Manna*
33. DP-33(G-263) Development of Cu-base Alloys with Nano- $Al_2O_3$  Dispersion for Electrical Contacts by Mechanical Alloying and Equal Channel Angular Pressing  
*S. Bera, Z. Zúberová, R. J. Hellmig, Y. Estrin and I. Manna*
34. DP-34(W-088) Sensing Properties of Polymer-Ceramic (PMN-PT -PVDF) Piezo-composites  
*Shrabanee Sen and S. K. Mishra*
35. DP-35(W-144) Cryogenic Treatment of Polymers and Polymer Composites - A Novel Technique to Improve Wear Resistance  
*K. N. Pande, D. R. Peshwe and Anupama Kumar*
36. DP-36(W-162) Synthesis of Al-Mg-SiO<sub>2</sub> Composites using Amorphous Silica Obtained from Rice Husk Ash  
*Pallavi Deshmukh, Jatin Bhatt, Shail Kumar Pathak and Dilip R.Peshwe*
37. DP-37(G-166) Tensile Properties of Carbon Fiber Reinforced SiC-Based Matrix Composites  
*Sweety Kumari, N. Padmavathi, N. Eswara Prasad and J. Subrahmanyam*
38. DP-38(G-193) Development of Insitu "Titanium Silicon Carbide" Dense Hard Micro and Nano-composite by Self-Propagating High-Temperature Synthesis (SHS) Process for Industrial Applications  
*Khushboo, S. Sen and S.K.Mishra*
39. DP-39(G-201) Large Scale Use of Steel Fibers Reinforced Monolithic Refractories : a Metal-Ceramic Composite-An Indian Experience  
*S.N. Laha and Bimal Choudhury*
40. DP-41(G-270) Assessment of Interphase in Hygrothermally Treated Carbon/Epoxy Micro Composites by FTIR Imaging  
*Surendra Kumar M, Neeti Sharma and B. C. Ray*

- 
41. DP-42(G-029) Light-emission in Er<sup>3+</sup> -Doped Ag: Al<sub>2</sub>O<sub>3</sub> Nanocermet  
*D. De, S. Ram, A. Kumar and S. K. Roy*
42. DP-43(W-097) Electrical Impedance and AC Conductivity Properties of Exfoliated but Poorly-Dispersed Nanoclay/Epoxy Nanocomposites  
*Rashmi and N.M. Renukappa*
43. DP-44(W-130) Iron- Phosphorus Based Hot Powder Forged Soft Magnetic Materials  
*D. Sharma, K. Chandra and P. S. Misra*
44. DP-45(G-128) Effect of Deposition Parameters on Sputter Deposited Nickel and Titanium Thin films on Silicon Substrates  
*B. Geetha Priyadarshini, S. Aich and M. Chakraborty*
45. DP-47(W-132) Study on Glass Formation and Crystallization of Zr<sub>54.5</sub>Cu<sub>20</sub>Al<sub>10</sub>Ni<sub>8</sub>Ti<sub>7.5</sub> Alloy  
*S. Neogy, K. Vaibhaw, R. Tewari, D. Srivastava, G. K. Dey, S. Banerjee and S. Ranganathan*
46. DP-48(W-135) Study of Magneto-Impedance behavior of Co-Fe-Nb-Si-B Based Ribbons  
*Partha Sarkar, O. Mohanta, R. K. Roy, S. K. Pal, A. K. Panda and A. Mitra*
47. DP-49(W-145) Effect of Al Addition on the Phase Transformation behaviour of Ni-Ti shape Memory Alloys  
*Meenu Sharma, Bikas C. Maji and Madangopal Krishnan*
48. DP-50(W-153) Role of Residual Stress and its Gradient along the Thickness in MEMS Fabrication  
*A. Kumar, P. Suryanarayana and S.V. Kamat*
49. DP-51(W-182) Structural and Electrical Properties of Dysprosia Doped zirconia (DySZ) for Intermediate-Temperature SOFCs  
*M. Pastor, S. Maiti, A. Pandey, K. Biswas and I. Manna*
50. DP-52(G-276) Pressure Sensitive Flow in Amorphous Materials and Temperature Dependence  
*K. Eswar Prasad and U. Ramamurty*
51. DP-53(G-287) Low Temperature Reactive Processing of ZrC Based Ceramics  
*L. Rangaraj, C. Nachiappan, C. Divakar and V. Jayaram*
52. DP-54(G-303) Non-wetting of Lotus Leaf  
*Kantesh Balani, Ruben Galiano Batista, Debrupa Lahiri and Arvind Agarwal*
53. DP-55(G-314) Precipitation Modeling of TiB<sub>2</sub> Based in-situ Aluminium Composite  
*Tarun Kumar Kundu and Anirban Patra*

# SYMPOSIUM E: MATERIALS DEGRADATION AND ENVIRONMENTAL ISSUES

VENUE: HALL E

CONVENOR: Professor J. Dutta Majumdar

DAY 1; November 16, 2009; MONDAY

## SESSION E.I.1: SURFACE ENGINEERING I

Schedule: 8.45 AM to 10.45 AM

Session Chairman: Mr. R. N. Parbat (Past President, IIM)

Session and Serial	Abstract Number	Schedule	Paper Title and Authors
		8.45 AM - 8.50 AM	Introduction to symposium E by Mr. R. N. Parbat (session chairman)
Award Lectures	NMD-9	8.50 AM - 9.05 AM	Implementation of Curtain Flame Ignition System and Improvement of Productivity of Sinter Plant-2, Bhilai Steel Plant <i>Thodimi Sreenivasa Reddy and Hemant Kumar Joshi</i>
	NMD-10	9.05 AM - 9.20 AM	Indigenisation of metaloceramic brakepads, development of premium grade Al-Si alloys and Failure analyses of Aerospace components <i>Vaisakhi Nandi</i>
E.I.1.1	EL-1 (W-180)	9.21 AM - 9.33 AM	Friction and Wear Properties of Steel Backed Al-10Sn-4Si-1Cu Bearing Strips Prepared Via Spray Atomization-Deposition-Rolling Route <i>Parikshit Munda</i>
E.I.1.2	EL-2 (G -008)	9.33 AM - 9.45 AM	Evaluation of Life Time of a Thermal Barrier Coated Superalloy used in Turbine Blade <i>A.K.Ray, S.C.Bose, P.K. Roy, Z.Alam, D.K. Das and J.D. Whittenberger</i>
E.I.1.3	EL-3 (G- 032)	9.45 AM - 9.57 AM	Theoretical and Experimental Investigation of the Interfacial Reactions during Hot Dip Galvanizing of Steel in Aluminium Containing Zinc Bath <i>G. K. Mandal, Sapan K. Das, R. Balasubramaniam and S. P. Mehrotra</i>
E.I.1.4	EL-4 (G- 014)	9.57 AM - 10.09 AM	Modelling Issues in Prediction of Residual Stresses Developed in a Thermal Barrier Coating <i>B. Srivathsa, M Zafir Alam, DK Das and SV Kamat</i>
E.I.1.5	EL-5 (W-211)	10.09 AM - 10.21 AM	Surface Hardening of Iron-based Alloys using Thermochemical Heat-Treatment <i>Santosh S. Hosmani, R.E. Schacherl and E.J. Mittemeijer</i>
E.I.1.6	EL-6 (G-235)	10.21 AM - 10.33 AM	Thermal Cycling Studies of 7-8% Ytria-Stabilized Zirconia Coating on 9Cr-1Mo Steel for Molten Chloride Environment <i>S.Ningshen, U.Kamachi Mudali and Baldev Raj</i>
E.I.1.7	EL-7 (G-241)	10.33 AM - 10.45 AM	Effect of Temperature and Substrate - Burner Distance on Structure and Morphology of Alumina Coatings obtained by Combustion Chemical Vapour Deposition <i>B. P. Dhonge, Tom Mathews, S. Dash, I. Manna and A. K. Tyagi</i>

**SESSION E.I.2: SURFACE ENGINEERING II**  
**Schedule: 11.00 AM to 1.00 PM**  
**Session Chairman: Dr. V. Ganesan (IGCAR Kalpakkam)**

<b>Keynote Lecture</b>	<b>EK-1</b>	11.00 AM - 11.20 AM	Modification of Material Surfaces with Non-thermal Plasmas <i>S. Mukherjee</i>
E.I.2.1	EL-8 (G-300)	11.20 AM - 11.32 AM	Simulation of Zinc Coating Profile on the Inner Surface of a Tube during its Galvanisation <i>Monojit Dutta and Chandan Guha</i>
E.I.2.2	EL-9 (W-093)	11.32 AM - 11.44 AM	Laser Surface Coating of Bulk Metallic Glass Composition on High Carbon Low Alloy Steel <i>A. Basu, J. Dutta Majumdar, N.B. Dahotre and I. Manna</i>
E.I.2.3	EL-10 (G-216)	11.44 AM - 11.56 AM	Deposition of Zinc Coatings using Plasma Enhanced Jet Vapor Deposition <i>Satyaprasad, R. S. Rane, J. Alphonsa, N. L. Chauhan and S. Mukherjee</i>
E.I.2.4	EL-11 (G-218)	11.56 AM - 12.08 PM	Co-Sputter Deposition Setup with Three Magnetrons for Depositing Nano-Composite Coatings <i>Kishor Kumar K and S. Mukherjee</i>
E.I.2.5	EL-12 (G-268)	12.08 PM - 12.20 PM	Synthesis and Characterization of Nanocrystalline NiAl and Ni <sub>3</sub> Al Coatings on Al Substrate <i>D.R.K.Sidharada and K.Chattopadhyay</i>
E.I.2.6	EL-13 (W-086)	12.20 PM - 12.32 PM	Influence of Plasma Electrolytic Oxidation on Corrosion Behavior of AZ31b Magnesium Alloy <i>R.Lingarajan, M.Selva Kumar, T.Thayananth and Muthupandi</i>
E.I.2.7	EL-14 (G-301)	12.32 PM - 12.44 PM	Characterization of Phase Transformation and Microstructural Development of Ni-B Coating during Heat Treatment <i>Soupitak Pal, Nisha Verma, Vikram Jayaram and Sanjay Kumar Biswas</i>
E.I.2.8	EL-47 (G-217)	12.44 PM - 12.56 PM	Effect of Energetic Ion Bombardment on Sputter Deposited Copper Coatings <i>Kishor Kumar K, J. Chakraborty, P. M Raole, P A Rayjada, N Chauhan and S. Mukherjee</i>
		12.56 PM - 01.00 PM	Concluding remarks by the session chair

**SESSION E.I.3: ENVIRONMENT AND MANAGEMENT**  
**Schedule: 4.15 PM to 6.15 PM**  
**Session Chairman: Mr. S. G. Tudekar (Uttam Galva Steel Ltd., Khapoli)**

<b>Keynote Lecture</b>	<b>EK-2</b>	04.15 PM - 04.35 PM	Sustaining Competitiveness in the Steel Sector by Harnessing Radically Innovative Quality Tools <i>Amit Ganguly</i>
E.I.4.1	EL-15 (G-010)	04.35 PM - 04.47 PM	Stringent Safety Measure Enhances Special Steel Productivity in SMS <i>A.N.Misra</i>

E.I.4.2	EL-16( G-022)	04.47 PM - 04.59 PM	AIS Steel Planner® Solutions: Setting the Trend in Supply Chain Management, Manufacturing Execution Systems and Advanced Planning and Scheduling Solutions for the Global Steel Industry <i>Thomas Quinet</i>
E.I.4.3	EL-17( G-019)	04.59 PM - 05.11 PM	Mechanised Testing Systems in Modern Steel Plants for Quality Control <i>Biswajit Chakraborty and Subhabrata Sen Gupta</i>
E.I.4.4	EL-18( G-088)	05.11 PM - 05.23 PM	Greenhouse Gas Warning and Strategies to Cut Thermal Power Emissions <i>S. Narayana</i>
E.I.4.5	EL-19( W-159)	05.23 PM - 05.35 PM	Study Of CO <sub>2</sub> Emission in an Integrated Steel Plant <i>S.Varghese</i>
E.I.4.6	EL-20( G-188)	05.35 PM - 05.47 PM	Rebuilding of Coke Oven Battery: An Opportunity to Make the Process Eco-Friendly <i>Pushpa Ambrose</i>
E.I.4.7	EL-21( G-122)	05.47 PM - 05.59 PM	Safety in SAIL/Bokaro Steel Plant, Coal Chemical Plant <i>K.K.Sanyal</i>
E.I.4.8	EL-22( W-137)	05.59 PM - 06.11 PM	In-situ Arsenic Removal Technology for Potable use of Ground Water <i>Sunita Kumari and Ranjit Prasad</i>
		06.11 PM - 06.15 PM	Concluding Remarks by the Session Chair

## DAY 2; November 17, 2009; TUESDAY

### SESSION E.II.1: ENVIRONMENTAL DEGRADATION I

**Schedule: 8.45 AM to 10.45 AM**

**Session Chairman: Prof. U. K. Chatterjee (IIT Kharagpur)**

<b>Keynote Lecture</b>	<b>EK-3</b>	8.45 AM - 9.05 AM	Influence of Stress on Environmental Degradation <i>Indranil Chatteraj</i>
E.II.1.1	EL-23( W-107)	9.05 AM - 9.17 AM	Corrosion Study of Iron Aluminide Coatings Produced by Chemical Vapour Deposition (CVD) <i>V. Dubey, John T. John and V. Kain</i>
E.II.1.2	EL-24( G-017)	9.17 AM - 9.29 AM	Stress Corrosion Cracking of Tail Rotor Blade of A Military Helicopter <i>Vaisakhi Nandi, R. R. Bhat, S. V. Suresh and S. Sreenivasan</i>
E.II.1.3	EL-25( G-016)	9.29 AM - 9.41 AM	Stress Corrosion Cracking Behavior of a Magnesium Alloy <i>B.S. Padekar, V.S.Raja and R. K. Singh Raman</i>
E.II.1.4	EL-26(W-168)	9.41 AM - 9.53 AM	Studies on Chemical Compatibility of U based Metallic Fuels for Liquid Metal Cooled Fast Breeder Reactor <i>A.K.Sengupta, Santu Kaity, R.K.Bhagat, R.P.Singh and H.S.Kamath</i>
E.II.1.5	EL-27( G-083)	9.53 AM - 10.05 AM	Corrosion Protection of Mild Steel by TiO <sub>2</sub> and TiO <sub>2</sub> -SiO <sub>2</sub> Coatings by Sol-Gel Method <i>Moumita Ganguli, Raghuvir Singh and S.K. Tiwari</i>
E.II.1.6	EL-28( W-052)	10.05 AM - 10.17 AM	Corrosion Behaviour of Spot-Welds on Interstitial Free steel Sheets <i>G. Mukhopadhyay, S. Bhattacharya and K. K. Ray</i>

E.II.1.7	EL-29( G-091)	10.17 AM - 10.29 AM	Influence of Pitting on the Fatigue Lives of 7075 T6 and T73 Aluminium Alloy <i>Swapna Dey, A.K. Basumallick, S.K. Das and I. Chattoraj</i>
E.II.1.8	EL-30( W-021)	10.29 AM - 10.41 AM	Corrosion Behaviour of In-situ Nanocrystalline Fe-Si Coating Produced by Mechanical Alloying <i>G Gupta, K. Mondal and R. Balasubramaniam</i>
		10.41 AM - 10.45 AM	Concluding Remarks by the Session Chair

## SESSION E.II.2: ENVIRONMENTAL DEGERADATION II

**Schedule: 11.00 AM to 1.00 PM**

**Session Chairman: Prof. D. K. Mandal (NIT, Durgapur)**

<b>Keynote Lecture</b>	<b>EK-4</b>	11.00 AM - 11.20 AM	Surface Modification and Coatings Development for Corrosive Environments <i>U. Kamachi Mudali</i>
E.II.2.1	EL-31(W-027)	11.20 AM - 11.32 AM	Galling Behaviour of Austenitic Stainless Steel in High Temperature Liquid Sodium <i>Hemant Kumar, V. Ramakrishnan, S.K. Albert, C. Meikandamurthy and A.K. Bhaduri</i>
E.II.2.2	EL-32( G-303)	11.32 AM - 11.44 AM	A Study on Performance Assessment of TRIP-Aided Steel During Hot Dip Galvanising <i>Tanmay Bhattacharyya, Shiv Brat Singh Christoph Keul, Frédéric Huber, Wolfgang Bleck and Debashish Bhattacharjee</i>
E.II.2.3	EL-33( G -027)	11.44 AM - 11.56 AM	Diffusion Silicide Coating on Refractory Metals And Alloys for Short-Term High Temperature Oxidation Protection <i>D.K. Das, Md. Z. Alam and Bijoya Sarma</i>
E.II.2.4	EL-34( G-229)	11.56 AM - 12.08 PM	Atmospheric Corrosion of Steels & Performance in Marine Environments <i>Jayanta Kumar Saha, P K Mitra, S. Paul and DDN Singh</i>
E.II.2.5	EL-35( W-124)	12.08 PM - 12.20 PM	Cyclic Oxidation Behaviour of Mo-Si-B and Mo-Si-B-Al Alloys <i>Sharma Paswan, R. Mitra and S. K. Roy</i>
E.II.2.6	EL-36(G-302)	12.20 PM - 12.32 PM	A Case Study on Metallurgical Study on Metallurgical Investigation on ASTM-B-338 Gr.2, Titanium Condenser Tube Weld at the 60 MW AL-HISWA Thermal Power Station and Desalination Plant in ADEN, Republic of Yemen <i>D. Sarkar, P. Roy, B.Bhar and B Chaudhuri</i>
E.II.2.7	EL-37 (G-159)	12.32 PM - 12.44 PM	Electrolytic Preparation of Europium hexaboride (EuB <sub>6</sub> ) by Molten Salt Technique <i>L.John Berchmans, S.Angappan, A.Visuvasam, Timy. P. Jose, M. Helan, C. Subramaniam and A.K.Suri</i>
E.II.2.8	EL-38( W-206)	12.44 PM - 12.56 PM	High Temperature Oxidation Resistance of Cr <sub>3</sub> C <sub>2</sub> -NiCr HVOF Coating on T91 Steel <i>Manish Goyal, Uma Batra and J D Sharma</i>
		12.56 PM - 01.00 PM	Concluding Remarks by the Session Chair

**SESSION E.II.3: WEAR OF MATERIALS**  
**Schedule: 2.00 PM to 4.00 PM**  
**Session Chairman: Prof. A. Basumallik (BESU, Howrah)**

<b>Keynote Lecture</b>	<b>EK- 5</b>	02.00 PM - 02.20 PM	Erosion and Abrasion of Hard Faced Surfaces at Elevated Temperature <i>Manish Roy</i>
E.II.3.1	EL-39( G -023)	02.20 PM - 02.32 PM	Effect of Cryogenic Treatment on the Microstructure and Corrosive Wear Resistance of Cr-Mn-Cu White Cast Irons <i>P.Kumar, K.Chattopadhyay and I.Chakabarty</i>
E.II.3.2	EL-40( G-186)	02.32 PM - 02.44 PM	Wear Behaviour of Zirconia Toughened Alumina with Different Oxide Additives <i>A. K. Dey, K. Biswas and S. Chatterjee</i>
E.II.3.3	EL-41( W-195)	02.44 PM - 02.56 PM	Hardness and Adhesion Rating on Optical Characterized Titania Thin Film, prepared by Non-Aqua Single Dip Coating Process <i>K. Murugan, Tata N. Rao, G.V. Narashima Rao, Ashutosh S. Gandhi and B.S. Murty</i>
E.II.3.4	EL-42(W-087)	02.56 PM - 03.08 PM	Effect of Sub-Zero Treatments on The Mechanical Properties of Die Steel <i>D. Das, A. K. Dutta and K. K. Ray</i>
E.II.3.5	EL-43( G-112)	03.08 PM - 03.20 PM	Development of High Strength (YS: 550 Mpa) Abrasion Resistant Plates in As-Rolled Condition at Bhilai Steel Plant <i>Atul Saxena, S. Bhattacharya, Kundan Prakash, S. K. Srivastava, R. Datta and S.K. Chaudhuri</i>
E.II.3.6	EL-44( G-127)	03.20 PM - 03.32 PM	Failure Analysis of Heavy Weight Drill Pipe <i>G.V.S.Murthy, Goutam Das, Swapan Kumar Das and S.R. Singh</i>
E.II.3.7	EL-45( W-200)	03.32 PM - 03.44 PM	Effects of Some Solid Lubricants Suspended in Oil Towards Controlling the Wear Performance of a Cast Iron <i>B. K. Prasad, S. Rathod, M. S. Yadav and O. P. Modi</i>
E.II.3.8	EL-46( G -075)	03.44 PM - 03.56 PM	Definition of a Wear Factor to Predict the Wear Behaviour of Plasma Nitrided Ti <sub>6</sub> Al <sub>4</sub> V Alloy <i>Sarala Upadhya, K S Rajam and B K Muralidhara</i>
		03.56 PM - 04.00 PM	Concluding remarks by the session chair

**SYMPOSIUM E: MATERIALS DEGRADATION AND ENVIRONMENTAL ISSUES**

**POSTER PRESENTATION**

Serial Number	Abstract Number	Paper Title and Authors
1.	EP-1(G-097)	Development of Alumina/Aluminide Coating on Steels <i>S.Majumdar and I. G. Sharma</i>
2.	EP-2 (G-099)	Electro-Less Coating of Pure Nickel on Cobalt Shapes using Hydrazine <i>Pamela Alex , J. Kishor, S. Majumdar and I. G. Sharma</i>

3. EP-3(W-194) Assessment of the Effect of Substrate Surface Condition on Wetting Behaviour and Evolution of Microstructure in Sn-Ag-Zn Solders  
*Satyanarayan, Narayan Prabhu and Girish Kumar*
4. EP-4(G-271) A Study on the Laser Surface Cladding of Aluminium on Iron Substrate  
*A. Viswanathan, Koneru Shalini Roy and K. Chattopadhyay*
5. EP-5(W-221) Effect of Temporal Pulse Shaping on the Characteristics of Laser Welds in Stainless Steel 316L  
*Poulami Chakraborty*
6. EP-6(G-214) Aluminizing of SS410 by Magnetron Sputtering  
*N. I. Jamnapara, R. S. Rane, K. Bihola, V. Acharya, N. L. Chauhan, P.M. Raole, A. Satyaprasad and S. Mukherjee*
7. EP-7 (G-215) Effect of Surface Roughness and Operating Parameters on Plasma Nitriding of AISI 304 Steel  
*S. Mukherjee, G.P. Singh, J. Alphonsa, P.K. Barhai, P.A. Rayjada and P.M. Raole*
8. EP-9(G-240) Failure Analysis of the Austenitic Stainless Steel Geyser Tank  
*Jayshri Dumbre, Asha Ingle, Sachin Joshi and Vinay Nadar*
9. EP-10(G-290) Effect of Anodizing Parameter of Sulfuric Acid Anodizing on Corrosion Characteristic of Pure Aluminium  
*Risin Dey and Prodyot Kumar Mitra*
10. EP-11(G-291) Synthesis of LaNiO<sub>3</sub> by Molten Salt Technique  
*S. Ignatius and L. John Berchmans*
11. EP-12(G-161) Molten Salt Synthesis of LiGd<sub>0.01</sub>Mn<sub>1.99</sub>O<sub>4</sub> using Chloride-Carbonate Melt  
*M. Helan and L. John Berchmans*
12. EP-13( G-199 ) Preparation of Silicon Metal by Molten Salts Electrolysis  
*S. Manikantan, V. R. Prabu, R. Rajeswaran, T. Selvin Devasahayam and V. Ananth*
13. EP-14(G-292) Exploring the Possibility of Using IFHS Steel as a Biocompatible Material  
*Shampa Dhar and P. K. Mitra*
14. EP-15(G-293) Electrochemical Impedence Spectroscopy Studies of Surface Treated and Untreated Titanium Alloys in Hank Solution  
*Kasturi Yadav and Subir Paul*
15. EP-16 ( G-294) Laser Surface Cladding of Titanium on AISI 316L Stainless Steel for Bio-implant Application  
*C.S. Murmu and J. Dutta Majumdar*
16. EP-17( G-026 ) Effect of Plain Aluminide Coating on the Tensile Properties of near Alpha ( $\alpha$ ) Titanium Alloy, Titan 29A  
*Chandrakant Parlikar, Zafir Alam and D K Das*
17. EP-18( G-295) Fe-Cr-Mo-Y-B-C Bulk Metallic Glass Coating on AISI 4340 Steel by Laser Surface Cladding  
*Monoj kumar Debnath, Anil kumar Chikkam, J. Dutta Majumdar N. B. Dahotre and I. Manna*
18. EP-19( G-059) Management of Impact of Waste in Steel Plant and Mines  
*R. Chowdhury*
19. EP-20(G-082) Occupational Safety, Health & Environment: Emerging Issues & Challenges  
*S. Vashishta*
20. EP-21(G-182) Energy Savings by use of Slotted Anodes  
*S.N.Das, S.P.Mohapatra and R.K.Barik*
21. EP-22(W-007) Corrosion Problems of Coated Sheet Metals and Their Remedial Measures  
*Vagge Shashikant Tukaram*
22. EP-23(W-081) Corrosion Study of AZ31 Alloy in Chloride Solution  
*P.Avinash, D.M.S. Srinivas, A. Kulkarni, K.V.N.S. Harsha, K. Salagala and A. K. Khanra*

23. EP-24(W-209) Electrochemical Corrosion Behavior of High Nitrogen, Ni and Mn Free Stainless Steels in Ringer physiological Solutions  
*S.B.Arya, V.S.Raja, A.N.Tiwari and Y. Katada*
24. EP-25(W-217) Aqueous Corrosion Study on U-Mo Alloy  
*Titas pal, V. Venkatesan, K. B. Khan and Arun Kumar*
25. EP-26( G-296) Effect of Sc and Zr Addition on the Corrosion Behavior of Al-Mg Alloys and Al-Mg Alloys Reinforced With TiB<sub>2</sub>  
*A.K. Lohar, J. Dutta Majumdar, B.N. Mondal and S.C. Panigrahi*
26. EP-27( G-236) Corrosion of Nickel Base Alloys in Molten LiCl-KCl Medium  
*A. Ravi Shankar, A. Kanagasundar and U.Kamachi Mudal*
27. EP-28 (G-265) Localized Corrosion of Stainless Steel 316L under the Base-Plate of the Barnacle, Amphibala US Reticulatus  
*R. Sangeetha and Ravi Kumar*
28. EP-29( W-198) Oxidation Behaviour of Sol-gel Nano Alumina Coating over 9Cr-1Mo Ferritic Steel  
*O. P. Modi, Gazala Ruhi, I.B. Singh and Anil K. Gupta*
29. EP-30 (G-297) Studies on Stress Corrosion Cracking of Alpha ( $\alpha$ ) and Alpha + Beta ( $\alpha+\beta$ ) Brass  
*Amitesh Chakraborty and B. Choudhury*
30. EP-31 (W-024) Comparative Studies on Dry Sliding Wear Behaviour of Pure Aluminium and Pure Copper  
*Ch. VenkatabRao, R.Srinivasu, G J Catherin and J Babu Rao*
31. EP-32 (W-057) Mechanical and Erosive Wear Behaviour of Particulate Filled PA66/PP Nanocomposites  
*Mohammed Ismail and B. Suresha*
32. EP-33 (W-059) Effect of Silica Sand and Quartz Abrasives on Three-Body Abrasive Wear Behaviour of SiO<sub>2</sub> Filled Epoxy Nanocomposites  
*B.Suresha, M.G.Veena, R.M. Devarajaiah and Kunigal N.Shivakumar*
33. EP-34 (W-061) Investigation on Three-Body Abrasive Wear Behavior of Carbon Fabric Reinforced Epoxy Composite with and with out SiC Filler  
*K.M.Subbaya, B. Suresha, N. Rajendra and Y.S. Varadarajan*
34. EP-35 (W-089) Two-Body Abrasive Wear Behavior of Particulate Filled Carbon Fabric Reinforced Epoxy Composites  
*B.N. Ramesh, B. Suresha and T. Jayaraju*
35. EP-36( W-060) Three-Body Abrasive Wear Behaviour of Cenosphere Filled Epoxy Composites  
*R.M. Devarajaiah, B. Suresha and P.R. Sadananda Rao*
36. EP-38 (G-298) Development of NiCrBSi Coating on Steel and Copper Substrate for Wear Resistance Application  
*P. Sharma and J. Dutta Majumdar*
37. EP-39 (G-299) Investigation on Wear Behavior of Spheroidal Graphite Iron Balls Austempered at Different Temperatures as a Grinding Media in Ball Mills  
*H. Raghavendra, K.L.Bhat and K.Rajendra Udupa*
38. EP-40(W-114) Oxidation and Hydrogen Pick up Behaviour of Zirconium Alloys - Effect of Dissolved Oxygen  
*M. Kiran Kumar and Vivekanand Kain*
39. EP-41(G-312) Low Temperature Sensitization and IGC Resistance of Stainless Steel 304LN  
*Raghuvir Singh, Gautam Das, P.K. Singh and I. Chattoraj*
40. EP-42(G-316) The Effect of Microstructure on Sulfide Stress Corrosion Cracking of Girth Weld Seamless Linepipe Steels  
*Asim Bag and K. K. Ray*

**STUDENTS' CONVENTION**  
**CONVENOR: Professor S. B. Singh**

**GROUP A: UNDERGRADUATE I**  
**VENUE: Hall A**

**Schedule: 2.45 PM to 4.00 PM; November 16, 2009**

Session and Serial	Abstract Number	Schedule	Paper Title and Authors
		2.45 pm - 2.50 pm	Introduction by Session Chairman ( <i>Mr. L. Pugazhenthay, Past President, IIM</i> )
SC.I.1.1	SCL-1(UG1)	2.50 pm - 3.02 pm	Mathematical Model for Prediction of Microstructural Heterogeneities and Scatter in Properties of TMCR-HSLA Steel <i>Prasun Chokshi</i>
SC.I.1.2	SCL-2(UG1)	3.02 pm - 3.14 pm	Study of Kinetics of Corrosion Behaviour of Mild Steel under Deformed Conditions <i>Pavleena, Shreshtha Karmakar and Soumilya Nayak</i>
SC.I.1.3	SCL-3(UG1)	3.14 pm - 3.26 pm	Influence of Stress on Bainite Formation <i>Ankita Mangal</i>
SC.I.1.4	SCL-4(UG1)	3.26 pm - 3.38 pm	Effect of Burnt Lime Addition on Sintering of Iron Ore Fines <i>Abhishek Sharma</i>
SC.I.1.5	SCL-5(UG1)	3.38 pm - 3.50 pm	Effect Of Heat Treatment On Fe -0.25%P - 0.1%C <i>Shahid Ahmad Makaia , Dar Abdul Baria</i>
		3.50 pm - 4.00 pm	Concluding Remarks by session chairman/ Judges

**GROUP B: UNDERGRADUATE II**  
**Venue: Hall B**

**Schedule: 2.45 PM to 4.00 PM; November 16, 2009**

		2.45 pm - 2.50 pm	Introduction by Session Chairman ( <i>Dr. S. K. Bhattacharyya, Past President, IIM</i> )
SC.I.2.1	SCL-6(UG2)	2.50 pm - 3.02 pm	Texture and Microstructure Evolution in Pearlitic Steel Deformed by Triaxial Compression <i>Pankaj Kumar</i>
SC.I.2.2	SCL-7(UG2)	3.02 pm - 3.14 pm	Composition-Process-Microstructure-Property Correlation: The Informatics-Based Approach <i>Riddhiman Bhattacharya and Raman Kumar</i>
SC.I.2.3	SCL-8(UG2)	3.14 pm - 3.26 pm	Effect of Pre-corrosion on Crack Initiation and Fatigue Life of an Aluminum Alloy <i>Sagar Ranjan Pradhan and Vaneshwar Kumar Sahu</i>

SC.I.2.4	SCL-9(UG2)	3.26 pm - 3.38 pm	Characterization and Evaluation of Inclusions in RH Degasser and Tundish and Modelling of Inclusion Removal in RH Degasser <i>Rohit Mishra</i>
SC.I.2.5	SCL-10(UG2)	3.38 pm - 3.50 pm	Development of Piezoelectric and Relaxor Ceramics for Sensor Materials <i>Pallavi Singh and Ravish Kumar</i>
		3.50 pm - 4.00 pm	Concluding Remarks by session chairman/ Judges

## GROUP C: POSTGRADUATE

Venue: Hall C

Schedule: 2.45 PM to 4.00 PM; November 16, 2009

		2.45 pm - 2.50 pm	Introduction by Session Chairman <i>Mr. Supriya Dasgupta, Past President, IIM</i>
SC.I.3.1	SCL-11(PG)	2.50 pm - 3.02 pm	Metal Catalyst CNT Synthesis by Arc-discharge Method in Air <i>Shiva Rama Krishna Singh</i>
SC.I.3.2	SCL-12(PG)	3.02 pm - 3.14 pm	Optimization of T6 Heat Treatment and Precipitation of Rheocast LM25 alloy and AlSi <sub>7</sub> Mg <sub>0.3</sub> Cu <sub>0.6</sub> Aluminum Alloy <i>Vivek Kumar</i>
SC.I.3.3	SCL-13(PG)	3.14 pm - 3.26 pm	Formation of Deformation Induced Martensite and its Reversion in 304 Stainless Steel <i>Shikhar Jha</i>
SC.I.3.4	SCL-14(PG)	3.26 pm - 3.38 pm	Slag Eye Area: Measurements and Correlations <i>Peranandhanathan.M</i>
SC.I.3.5	SCL-15(PG)	3.38 pm - 3.50 pm	Reduction of the Aging Period for High Carbon Wire Rods rolled from TATA Steel Billets <i>Kaushik Chandra and Danish Khan</i>
		3.50 pm - 4.00 pm	Concluding Remarks by session chairman/ Judges

## STUDENTS' CONVENTION

## POSTER PRESENTATION

Serial Number	Abstract Number	Paper Title and Authors
1.	SCP-1(UG)	M Type' High Temperature Rolled in Scales <i>Romil Ravi</i>
2.	SCP-2(UG)	Study of Characterisation of Iron Ore and Blast Furnace Flue Dust Pellets for use in Steelmaking <i>Arpita Banerjee, Moumita Dutta and Sohini Adhikari</i>
3.	SCP-3(UG)	Nanogold and Nanosilver <i>Shrijit Kulkarni and Pushkar Deshpande</i>

4. SCP-4(UG) Investigation of Structural and Elctrical Properties of Ba<sub>2</sub>DyNbO<sub>6</sub>  
*Suharto Chatterjee*
5. SCP-5(UG) Fabrication of Densed In-situ Ti-Si-C Nano - composite by Self Propagating High Temperature Synthesis (SHS) Process  
*Khushboo*
6. SCP-6(UG) Fractal Quantification of Simulated Hexagonal Bimodal Microstructures  
*Harsh Agarwal*
7. SCP-7(UG) Synthesis of Pt nanoparticle Thin Films on Glass Substrate at Ambient Temperature under the Influence of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>  
*Debangshu Mukherjee*
8. SCP-8(UG) Evaluation of the Nature of Doping in N Doped ZnS: A Photoelectron Spectroscopy Study  
*K. Ganguly*
9. SCP-09(UG) Synthesis and characterization of APTS and Citric acid functionalized Ferrofluids  
*Himanshu Agarwal and Rahul Shukla*
10. SCP-10(UG) Steel Making is a Process of Making Steel with Great Precision and One Has to Check all the Parameters of Temperature, pressure, content etc  
*Mohit Kumar Agarwal*
11. SCP-11(UG) Effect of Bed Height on Sinter Properties  
*Shailendra Kumar and Birendra Kumar*
12. SCP-12(UG) Evolution of Texture and Microstructure during Cold Asymmetric Rolling of Magnesium AZ80 Alloy  
*Ritu Sahore*
13. SCP-13(UG) Age-Hardening in As-Cast Al-Mg-Si-Sc Alloy  
*Raman Kumar*
14. SCP-14(UG) Bi-Modal Microstructure in IF Steel  
*Gautam Anand*
15. SCP-15 (UG) Modeling of Fluid Flow and Inclusion Particle Behavior in Steelmaking Tundish  
*M. Abhiram*
16. SCP-16(UG) Reconstruction of the High Temperature Parent Phase Orientation from the Measured Product Phase Orientation  
*Prateek Tripathi and Abhinav Jain*
17. SCP-17(UG) Isothermal and Non-isothermal Oxidation Kinetics of Nano - Yttria Dispersed Ferritic Steel Prepared by Mechanical Alloying and Hot Iso-static Pressing  
*Anshul Meharwal*
18. SCP-18(UG) Modeling the Effect of Size Distribution of Precipitate Particles on the Final Grain Size of Al-TiB<sub>2</sub> Alloy and Simulation of Interfacial Free Energy by Molecular Modeling  
*M. Ravikant*
19. SCP-19(UG) Process and Identification of Parameters Necessary to Nanocrystallize a Fe-Ni Based Bulk Glassy Material and the Effect of Nanocrystallization on Magnetic Properties  
*Gaurav Garg*
20. SCP-20(UG) On the Encapsulation of Active Materials in Organic Photovoltaics  
*Priyamvada Bhaskar*
21. SCP-21(UG) Synthesis of Zr-aluminide Reinforced In situ Metal Matrix Composites by Reactive Sintering  
*Himanshu Singh Raghuvanshi*
22. SCP-22(UG) Galvanostatic Deposition of Conducting Poly (aniline-co-o-anisidine) Coating on Low Carbon Steel and its Corrosion Performance  
*Manish P. Meshram and Prasad P. Murmey*

- 
23. SCP-23(UG) Electrodeposition of Polymers - polyaniline, Poly(O-anisidine) and Copolymer on Low Carbon Steel for Corrosion Protection  
*Manta sharma, Manjushree Walzade and Sandhya Pondkule*
24. SCP-24(PG) Friction surfacing of CP-Aluminium on similar substrate  
*P.Veeranjaneyulu*
25. SCP-25(PG) Minimizing Transition Slab Volume through Improved Tundish Practice  
*Sumanta Bagui*
26. SCP-26(PG) Effect of Minor Variations in Composition on the Thermo Physical Properties of Zr Based BMGs  
*Rohit Satapathy*
27. SCP-27(PG) Microstructural Optimization in High Silicon Austempered Bearing Steel  
*Madhumanti Bhattacharyya*