175 YEARS OF IIT ROORKEE
Estd. 1847

Estd. 1963
60 YEARS OF
Department of Metallurgical and Materials Engineering

3rd International Conference
on

ADVANCES IN MATERIALS & PROCESSING: CHALLENGES & OPPORTUNITIES

October 17-19, 2022

Organized by

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

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Technical Program

Day – 1 (17th October)	
8:00 am onwards	Registration and Breakfast
9:00 am – 9:30 am	Inaugural Session
9:30 am – 10:30 am	**Plenary Talk – I (Room # L2-004)** Session Chair: Prof. B.S.S. Daniel Speaker: Dr. Debashish Bhattacharjee (VP, Tata Steel) Title: Opportunities in New Materials in India
10:30 am – 11:00 am	High Tea
11:00 am – 1:00 pm	Parallel Technical Sessions

Thermomechanical Processing (AMP-1) (Room # L2-001)

Session Chair: S. Suwas, IISc Bangalore ***Co-chair: V. Pancholi, IIT Roorkee***

11:00 - 11:30: V.S. Sarma, IIT Madras (Keynote)
Development of high strength-high ductility medium Mn advanced high strength steel through CALPHAD based alloy design and thermomechanical processing

11:30 - 11:50: N.P. Gurao, IIT Kanpur
Micro-mechanisms of anisotropic deformation and damage evolution in commercially pure titanium

11:50 - 12:10: S. Sankaran, IIT Madras
A Novel high strength CMnSiAl quenching and partitioning (Q&P) steel: Partitioning mechanisms, Microstructures and Properties

12:10 - 12:30: A. Patra, IIT Bombay
Crystal plasticity constitutive modeling of thermomechanical deformation in Ni-based superalloys

12:30 - 12:50: S.S. Singh, IIT Kanpur
Structure-Property Correlation in Magnesium Alloys

12:50 - 13:10: S. Kumar, NIT Raipur
Finite Element Simulation of Hot Deformed high strength steel using Deform 3D FEM simulation

Reuse, Recovery and Recycling (MS-1) (Room # L2-002)

Session Chair: A. Jha, University of Leeds ***Co-chair: N Dhawan, IIT Roorkee***

11:00 - 11:30: Pradip, TRDDC (Keynote)
Reengineering a sustainable world

11:30 - 11:50: D K Singh, BARC Mumbai
Rare Earths Sustainability: Developing Rare Earth Value Chain in India

11:50 - 12:10: R. Ruhela, BARC Mumbai
Recycling technologies for recovery of rare earths, valuable and hazardous metal values from e-waste

12:10 - 12:30: M. Kumar, NML Jamshedpur
Production of High Purity Copper Powder by Direct Electrolytic Refining from End-of-life Industrial copper waste scraps and tungsten powder from tungsten-copper (W-Cu) electrical contacts

12:30 - 12:50: A. Barnwal, CMET Hyderabad
5. *Selective recovery of lithium and manganese values from discarded coin cell*

12:50 - 13:10: N. Shukla, IIT Roorkee
Recovery of rare earth elements from waste fluorescent lamp phosphor

Phase Transformation in Steels (AS-1) (Room # L2-003)	
Session Chair: V Kumar, SAIL	***Co-chair: S Das, IIT Roorkee***
11:00 - 11:30: S.B. Singh, IIT KGP (Keynote) Phase transformations in high strength steels	
11:30 - 11:50: G.K. Bansal, NML Jamshedpur *Comprehending Structure-Property Relationship in Quench and Nonisothermally Partitioned Steels*	
11:50 - 12:10: A. Varshney, Maulana Azad National Institute of Technology Bhopal *Enhancement of thermal stability of retained austenite in TRIP assisted steels by cold working*	
12:10 - 12:30: S.M. Hasan, IIT Jodhpur *Thermomechanical processing of carbide-free bainitic steel*	
1:00 pm – 2:00 pm	**Lunch**
2:00 pm – 4:00 pm	**Parallel Technical Sessions**
Welding and Additive Manufacturing (AMP-2) (Room # L2-001)	
Session Chair: V S Sarma, IIT Madras	***Co-chair: G Agarwal, IIT Roorkee***
14:00-14:30: R. Kottada, IIT Madras (Keynote) *Deformation Behavior of Additively Manufactured High Temperature Alloys*	
14:30 - 15:00: J. Ram, IIT Hyderabad (Keynote) *Wire-arc additive manufacturing of nickel aluminum bronze*	
15:00 - 15:20: A. Arora, IIT Gandhinagar *Friction Stir Processing - Applications in Surface Modification and Heat Sinks*	
15:20 - 15:40: N. Sharma, IIT Jodhpur *Microstructural Transformations during High-frequency Electric-Resistance Welding and Post-weld Heat-treatment of X70 Pipeline Steel*	
15:40 - 16:00: A.K. Choudhary, IIT Bhilai Effect of Friction Stir Welding process parameter on defect formation of AA6061 using the numerical technique and experimental validation	
Biomaterials (MS-2) (Room # L2-002)	
Session Chair: K. Pal, IIT Roorkee	***Co-chair: D Lahiri, IIT Roorkee***
14:00-14:30: K. Chatterjee, Indian Institute of Science, Bangalore (Keynote) *3D Printing of Biomaterials*	
14:30 - 14:50: S. Ghosh, IIT Delhi *3D Bioprinted Cartilage*	
14:50 - 15:10: B. Kundu, CGCRI *Engineered vascularising electrospun dermal grafts by integrating fish collagen and ion- doped bioactive glass*	
15:10 - 15:30: A. Poundarik, IIT Ropar *Advanced Materials and Processing Technologies for Medical Device Development*	
15:30 - 15:50: S. Gupta, IIT Roorkee *Microwave Heating of AZ31/HA Biocomposites: Correlation between Simulation and Experimental Results*	
15:50 - 16:10: N. Anand, IIT Roorkee *Investigation of microstructural, mechanical, degradation and biocompatibility behavior of PLA/HA/TiO2 coating on Zn-based composites for orthopaedic applications*	

Mechanical Behavior of Steels (AS-2) (Room # L2-003)	
Session Chair: N.P. Gurao, IIT Kanpur	***Co-chair: A Karmakar, IIT Roorkee***
14:00 - 14:30: D. Chakrabarti, IIT Kharagpur (Keynote) *Ductile-Brittle transition in steels: One of the reasons for "Titanic Ship Disaster*	
14:30 - 14:50: S.K. Thakur, Steel Authority of India Ltd. *Investigation of the Microstructure and Mechanical Properties of Structural Steels by Warm Rolling*	
14:50 - 15:10: S.T. Nori, NCBJ Poland *Elucidating Irradiation Effects in Potential Structural Materials for Advanced Nuclear Energy Applications*	
15:10 - 15:30: R. Barik, IIT Kharagpur *Bridging microstructure and crystallography with the micromechanics of cleavage fracture in a lamellar pearlitic steel*	
15:30 - 15:50: P. Kaushik, IIT Roorkee Investigating the effects of induction Heating on Friction Stir Welding of Low Carbon Steel	
4:00 pm – 4:30 pm	**Tea**
4:30 pm – 7:00 pm	**Poster Session**
Day – 2 (18th October)	
8:00 am - 8:50 am	Breakfast
9:00 am – 9:45 am 9:45 am – 10:30 am	**Plenary Talk – II (Room # L2-004)** Session Chair: K. Biswas, IIT Kanpur Speaker: Prof. Indradev Samajdar (IIT Bombay) Title: Aspects of Deformed Microstructures in Aluminum Alloys **Expert Talks** Dr. Andrew Jones (Anton-Paar) Latest developments in X ray Diffraction Systems Mr. N. Sridhar (Zeiss) Accelerating Materials Research using ZEISS 3D X-Ray Imaging Solutions
10:30 am – 11:00 am	Tea
11:00 am – 1:00 pm	Parallel Technical Sessions

Thermo-Mechanical Processing (AMP-3) (Room # L2-001)	
Session Chair: P Kumar, IISc Bangalore	***Co-chair: S Mishra, IIT Roorkee***
11:00 - 11:30: S. Suwas, IISc Bangalore (Keynote) *Paradigm shift in manufacturing: Rolling challenges for materials scientists and engineers*	
11:30 - 11:50: P. Kumar, IISc Bangalore *Effect of High-Pressure Torsion on a Mechanical and Electrical Properties*	
11:50 - 12:10: P. Pant, IIT Bombay *Development of Manufacturing Techniques for Indigenization of Ti-Alloys Tube production*	
12:10 - 12:30: G. Das, NFC, Hyderabad High temperature transverse deformation behavior of directionally solidified Ni-based superalloy	
12:30 - 12:50: N.S. Dubey, NFC, Hyderabad *Comparative study of heat treatment of Ni-Cr-Mo alloy tubes in Resistance & Induction heating continuous furnaces*	

12:50 - 13:10: K.A. Raj, RGUKT, R K Valley, Andhra Pradesh *Effect of Nickel addition on evolution of microstructure of ZA 27 alloy*	
Theory and Computation in Materials (MS-3) (Room # L2-002)	
Session Chair: A. Parashar, IIT Roorkee	***Co-chair: A Lahiri, IIT Roorkee***
11:00 - 11:30: G. Phanikumar, IIT Madras (Keynote) *Parametric space exploration for microstructure prediction towards vertical integration in ICME*	
11:30 - 11:50: A. Alankar, IIT Bombay *Machine Learning for Material Design, Mechanics and Beyond*	
11:50 - 12:10: G. Tennyson, TRDDC, Pune *Integrated Computational Materials Engineering (ICME) – a paradigm shift in materials discovery, design, development and deployment*	
12:10 - 12:30: G. Kumar, NIT Uttarakhand *Finite Element Analysis of Melting of Bulk Metals using Microwave Energy at 2.45 GHz*	
12:30 - 12:50: G. Haribabu, IISc Bangalore *Adversarial Networks for Synthetic Microstructure Generation to Establish Process-structure Linkages*	
Green and Modern Steel Technology (AS-3) (Room # L2-003)	
Session Chair: Pradip, TRDDC	***Co-chair: G.P. Chaudhari, IIT Roorkee***
11:00 - 11:30: G.G. Roy, IIT Kharagpur (Keynote) *Towards Green Steel Technology for Coal Based Economy*	
11:30 - 11:50: N. Viswanathan, IIT Bombay *Process Modelling from Iron and Steel Making – Some Case Studies*	
11:50 - 12:10: S. Sarkar, IIT Madras *An experimental investigation of bubbling and slugging behavior in 2D gas-solid tapered fluidized beds*	
12:10 - 12:30: K. Mondal, IIT Kanpur *New generation hybrid sacrificial anodes based on iron*	
12:30 - 12:50: C. Srishilan, IIT Jammu *Modeling and Simulation – A milestone in Journey towards Green Iron and Steel Making*	
12:50 - 13:10: G. Prakash, PEC, Chandigarh *Bibliometric review of Iron making in different countries of the world*	
1:00 pm – 2:00 pm	**Lunch**
2:00 pm – 4:00 pm	**Parallel Technical Sessions**
High Entropy Alloys (AMP-4) (Room # L2-001)	
Session Chair: D. Chakrabarti, IIT Kharagpur	***Co-chair: S Mula, IIT Roorkee***
14:00 - 14:30: K. Biswas, IIT Kanpur (Keynote) *Multicomponent Quasicrystal as Template for 2D Alloys: Energy and Sensor Applications*	
14:30 - 14:50: S. Sinha, IIT (BHU) Varanasi *Design and characterization of a Fe20Cr20Mo20Nb30Ti10 complex concentrated alloy: Exploring new compositions based on refractory elements*	
14:50 - 15:10: N.P. Gurao, IIT Kanpur *Microstructure-mechanical property paradigm in non-equiatomic MoNbTaVW refractory high entropy alloy subjected to high pressure torsion*	
15:10 - 15:30: R. Sriharitha, IIT Gandhinagar *Non-wetting Aluminium 5083 alloys*	

15:30 - 15:50: R. Jain, IIT Kanpur
Simultaneous increase in strength and ductility under dynamic compression of transformation assisted Fe50Mn30Co10Cr10 complex concentrated alloy

15:50 - 16:10: S.R. Jha, IIT Kanpur
Effect of modulation in grain size distributions and recrystallization kinetics over mechanical properties of low SFE Medium Entropy Alloy

Functional Ceramics (MS-4) (Room # L2-002)

Session Chair: BRK Nanda, IIT Madras ***Co-chair: I Lahiri, IIT Roorkee***

14:00 - 14:30: A. Roy, IIT Bhubaneswar
Structural and electromechanical characterization of lead magnesium niobate-lead titanate (PMN-0.3PT) piezoceramic for mechanical energy harvesting

14:30 - 15:00: S. Misra, IIT Kanpur
Regulating the mechanical, electrical and thermal properties of integrated MCNTs/Cu composites synthesized via molecular assisted wet chemical route

15:00 - 15:30: R.R Mishra, BITS Pilani
Fabrication of graphite ink-based electrodes for supercapacitor: an evaluation of microwave and conventional heating approaches

15:30 - 15:50: A Pundir, IIT Roorkee
Biowaste derived hierarchical porous carbon structure for trapping poly-sulfides in Li-S battery

Mechanical Behavior of Steels (AS-4) (Room # L2-003)

Session Chair: S.B. Singh, IIT Kharagpur ***Co-chair: U Prakash, IIT Roorkee***

14:00 - 14:30: V. Kumar, SAIL Ranchi (Keynote)
Development and Processing of Special Steels – issues & challenges

14:30 - 15:00: M. Dutta, Tata Steel (Keynote)
Future Trends in Automotive Steels

15:00 - 15:20: P. Setia, IIT Kanpur
Effect of Si addition on the Microstructure and Mechanical Properties of Stainless Steels

15:20 - 15:40: S. Biswal, IIT Kharagpur
Modeling the precipitation strengthening in austenitic stainless steel for high temperature applications

15:40 - 16:00: P. Rawat, IIT Roorkee
Deformation induced martensitic transformation in high Al ferritic low density steel

4 pm – 4:30 pm	**Tea**
4:30 pm – 5:30 pm	**Plenary Talk – III (Room # L2-004)** Session Chair: N. Viswanathan Prof. Animesh Jha (University of Leeds, UK) Title:Environmentally Sustainable Extraction of Metallic Values from Titaniferous Mineral Resources and Integration of Process Steps for Manufacturing
5:15 pm – 7:00 pm	**Poster Session**
7:00 pm onwards	**Gala Dinner**

Day – 3 (19th October)

8:00 am - 8:50 am	**Breakfast**
9:00 am – 11:00 am	**Parallel Technical Sessions**

Powder Technology (AMP-5) (Room # L2-001)
Session Chair: R. Sriharitha, IIT Gandhinagar Co-chair: BV Manoj Kumar, IIT Roorkee
9:00 - 9:20: **A. Kumar**, IIT Tirupati *Sand casting of surface alloyed butterfly valve with improved hardness, adhesion, and corrosion resistance by incorporating metal powders in-mold coatings*
9:20 - 9:40: **B. Nath**, NFC Hyderabad *Advances in uranium processing for PHWR Fuel fabrication*
9:40 - 10:00: **S. Bera**, NIT Durgapur *Remarkable hardening behaviour of micro alloyed Al-Cu-Ni alloys*
10:00 - 10:20: **V. Srinivasan**, CSIR-SERC Chennai *Evaluation of Mechanical Properties of Blended Geopolymer Concrete*
10:20 - 10:40: **A. Bhadauria**, IIT Kanpur *Evaluation of mechanical behavior of bimodal microstructure of Al2O3-YSZ-CNT plasma sprayed coatings*
10:40 - 10:55: **A. Arora**, IIT Roorkee *Effect of Y2O3 and Al addition on mechanical properties and micrographic features of Zr based Invar alloy prepared by mechanical alloying + spark plasma sintering*
10:55 - 11:10: **Ch. S. P. Rao**, IIT Roorkee 7. *Influence of heating rate in sintering on microstructure and tribological behaviour of ultra-fine TiCN cermets*

Energy Storage & Harvesting (MS-5) (Room # L2-002)
Session Chair: V. Balakrishnan, IIT Mandi Co-chair: A Sil, IIT Roorkee
9:00 - 9:30: **A. Mukhopadhyay, IIT Bombay** **(Keynote)** *Layered' transition metal oxides for alkali metal-ion batteries: issues and perspectives*
9:30 - 9:50: **B.R.K. Nanda**, IIT Madras *Identifying the Useful Halides Within the Perovskites and Extended Families: An Electronic Structure Perspective*
9:50 - 10:10: **A. Subramaniam**, IIT Kanpur *Nano-hybrids for Hydrogen Storage*
10:10 - 10:30: **K.S. Nalwa**, IIT Kanpur *Addressing the stability issue of perovskite solar cells*
10:30 - 10:50: **H.M.A. Hakkeem**, NIIST Thiruvananthapuram *Decisive Role of TEMPO-Oxidized Cellulose Nanocrystals as Structure Directing Agent for Ultra-Stable Au@Pd Nanoflowers with Enhanced Catalytic Properties*

11:00 am – 11:30 am	**Tea**
11:30 am – 1:30 pm	**Parallel Technical Sessions**

Young Researchers Talks-1 (Room # L2-001)
Talk Duration: 10 minutes
Session Chair: N.P. Gurao, IIT Kanpur
1. *Accumulative Roll Bonding Process with Increased Yield for Synthesis of Mg-based Hybrids for Hydrogen Storage* **S. Shukla**, IIT Kanpur

2. *Multi-phase and multi-component Flame Synthesis of Disordered Carbon Hybrids for Hydrogen Storage*

   I.M. Date, IIT Kanpur

3. Effect of dry sliding wear on the surface characteristics of moderately high C-high Si bainitic steel

   Neetu, IIT Kanpur

4. *Thermomechanically controlled rolling schedule of cast & homogenized superalloy 625 for AUSC power plant applications*

   A.K. Godasu, IIT Roorkee

5. *Effect of inter-critical annealing atmosphere on microstructure and subsequent corrosion behavior of hot-dip galvanized Mn containing high-strength steel*

   H. Kancharla, IIT Kanpur

6. *Microstructure and Mechanical Properties of TaC-SiC Composites*

   S. Pandey, IIT Roorkee

7. *Bainitic Rail Steel in Heavy Haul Railway Tracks: A Critical Review*

   R. Samanta, KNU WB

8. Challenges associated with 3D printing of poly-ether-ether-ketone (PEEK) components

   G Sharma, BITS Hyderabad

Young Researchers Talks-2 (Room # L2-002)

Talk Duration: 10 minutes

Session Chair: R. Sriharitha, IIT Gandhinagar

1. *Hot deformation behavior of medium carbon low alloy steel using Arrhenius and ANN modeling methods*

   H. Shekh, IIT Roorkee

2. *Development of Property Prediction Model for Hot Strip Mill Using Machine Learning Algorithms*

   R. Muley, CoE Pune

3. *Carbon Nanotube reinforced Ultra High Molecular Weight Polyethylene Composites*

   K. Phand, IIT Roorkee

4. *A novel technique for fabricating high-impact strength carbon fiber composite using vacuum-assisted resin infusion microwave curing process*

   R. Kumar, IIT Mandi

5. *Low temperature Nitriding and Erosive wear of 13/4 MSS for hydro-turbine application*

   A.S. Yadav, IIT Roorkee

6. *Plate-type carbonitrides development in ferrite matrix during nitrocarburizing of Fe-4 wt.% V alloy*

   A. Kashyap, IIT Roorkee

7. *Development of 18Cr Oxide Dispersion Strengthened (ODS) Steels Through Hot Powder Forging*

   R. Singh, IIT Roorkee

Young Researchers Talks-3 (Room # L2-003)

Talk Duration: 10 minutes

Session Chair: K.S. Nalwa, IIT Kanpur

1. *Effects of various processing parameters on structure and mechanical properties of multi-phase high strength steel*

   S. Mandal, KNU, West Bengal
2. *Regulating the mechanical, electrical and thermal properties of integrated MCNTs/Cu composites synthesized via molecular assisted wet chemical route*

   S. Mishra, IIT Kharagpur
3. *Study on the effect of grain size on deformation induced transformation kinetics in SS 304 steel*

   A. Jain, MANIT Bhopal
4. *Thermal and Flame Retardancy Behavior of Eggshell Filler Reinforced Polypropylene Composites*

   S. Gairola, IIT Roorkee
5. *Tin oxide / hard carbon nanocomposite as superior negative electrode material for sodium-ion battery*

   B. Verma, IIT Roorkee
6. *Thermodynamically consistent Unified Interaction Parameter Formalism for prediction of local equilibria conditions during phase transformation in Fe-C-X (X = Mn, Si and Cr) systems*

   V. Sahu, AcSIR Ghaziyabad
7. *Effect of flow velocity on flow accelerated corrosion behavior of API 5L X60 and X70 steels*

   L.K. Meena, IIT Roorkee
8. *Aluminum foaming by friction stir processing*

   D. Lohani, IIT Roorkee

1:30 pm – 2:30 pm	**Lunch**
2:30 pm – 5:00 pm	**Technical Workshop**

Poster Session (17th October, 2022) 4:30 pm – 7:00 pm

Advanced Materials Processing

1. *Microstructure and Mechanical Properties of hot worked Ni-Cu-Al-Ti alloy*

   A. Udare, College of Engineering, Pune
2. *The shielding effectiveness of electromagnetic radiations by metal oxide composite of conducting and magnetic phases*

   V. Lokhande, College of Engineering, Pune
3. *Investigating the effects of induction Heating on Friction Stir Welding of Low Carbon Steel*

   P. Kaushik, IIT Roorkee

4. *Electron Beam Welding and Gas Tungsten Arc Welding Studies on CP-Ti Sheets*
   V. Gaur, Academy of Scientific and Innovative Research (AcSIR), Ghaziabad
5. *Effect of Friction Stir Welding process parameter on defect formation, forces, and strength of AA2024 using the numerical technique with experimental validation*
   A.K. Choudary, IIT Bhilai
6. *Investigation of the effect of welding speed in corrosion behaviour of friction stir welded dissimilar Al5083 and Al6061 alloy*
   J. Samuel, IIT Gandhinagar
7. *Effect of Tin addition on mechanical and corrosion behavior of Mg-Zn-Si alloy*
   G. Gupta, IIT Kanpur
8. *Investigation on masked cathode electrochemical surface texturing using additive manufactured pattern*
   M. Rajakumaran, IIT Roorkee
9. *Finite element assisted self-consistent simulations to capture texture heterogeneity during hot compression and its subsequent effect on rolling and recrystallization texture*
   B.P. Singh, IIT Roorkee
10. *Modelling the effect of pre-deformation on precipitation kinetics of AA2195 alloy*
    P. Bharti, IIT Roorkee
11. *Studies on Trace additions of Si on microstructure and mechanical behaviour of high-entropy alloys based on FeMnNiCrCu system*
    P. DVT, NIT ANdhrapradesh
12. *Joining of HfB_2-ZrB_2 based composites with and without Ni filler layer*
    S. Bajpai, IIT Kanpur
13. *Numerical and Experimental study on T-joints of Al-Mg-Sc alloy for Aerospace Grade Integrated Stiffened Panels*
    N. Kumar C, Materials Science Division, National Aerospace Laboratories, Bangalore
14. *Development of Al_3BC reinforced novel in-situ Al-based metal matrix composites via warm-extrusion*
    T. Pal, NIFFT Ranchi
15. *Enhanced Mechanical Properties of Machining and Ballistic Impact By-products*
    V. D. Mishra, IIT Madras
16. *Fatigue crack growth behavior of additively manufactured Ti6Al4V alloy*
    L. Bhandari, IIT Roorkee
17. *Effect of Aging on microstructure and tensile properties of superalloy 617*
    S. Hamid, IIT Roorkee
18. *Localized corrosion performance of retrogression and re-ageing treated 7068 aluminium alloy*
    Ankur, IIT Roorkee
19. *Development of novel transformative ternary medium entropy alloy by tailoring the stacking fault energy*
    S. Mahato, IIT Kanpur

20. *Surface modification of NiO nanoparticles using stearic acid and their application as adsorbent*
M. Narwal, IIT Roorkee
21. *Synthesis of Fe2O3@SnO2 core-shell nanocomposites using thermal decomposition approach and their application as an adsorbent*
K. Gangwar, IIT Roorkee
22. *Synthesis of SiO2@MnCo2O4 core-shell nanorattles via calcination of SiO2@MnCo-LDH precursors and studies on their peroxidase-like activity*
P. Rana, IIT Roorkee
23. *Deformation Characteristics of Ti45Fe5Ni50 Dual two Phase (B2+D024) intermetallic alloy*
S.S. Panda, IIT Kanpur
24. *Utilization of Ballistic Impact and Machining to Induce Severe Plastic Deformation in Metals*
V.D. Mishra, IIT Madras
25. *Ferrite grain refinement by thermomechanical controlled processing in low carbon Nb-V stabilized microalloyed steel*
P.P. Singh, IIT Roorkee
26. *Effect of Tool Transverse speed and Zn interlayer on microstructure and mechanical properties of Dissimilar FSW of Al 7075 and Mg AZ31 alloys*
S.K. Dewangan, NIT Raipur
27. *Effect of homogenization on the creep behavior of as-cast alloy 625*
A. Omar, IIT Roorkee
28. *Microstructure evolution and mechanical properties of Sr modified near-eutectic Al-Si alloys*
P. Bohane, VNIT Nagpur
29. Effect of prior deformation on the formation of the martensite in Ti-6Al-4V alloy
K.N. Chaithanya Kumar, IIT Roorkee
30. *Evolution of microstructure during thermo-mechanical processing of $CoCrNiSn_{0.1}$ medium entropy alloy*
N.K. Chaitanya, IIT Hyderabad
31. *Molten salt hot corrosion behaviour of plasma sprayed Bilayer thermal barrier coating with ytterbium oxide doped Gadolinium zirconate and Yttria stabilized zirconia*
Rajasekaramoorthy, Sathyabama Institute of Science and Technology, Chennai
32. *Damage micro-mechanisms of the different microstructures of conventional and additively manufactured Ti6Al4V*
S. Chandrakar, IIT Kanpur
33. *Development of strong recrystallization texture during cold-rolling of cost-effective high entropy alloy*
B. Tripathy, IIT Hyderabad
34. *Development of Eco-friendly Corrosion Inhibitor Coating for Carbon Steel in Marine Environment*
A. Verma, IIT Kharagpur

35. *Study of microstructure, mechanical and corrosion behaviour of TIG weldments between AISI304L and AISI430 stainless steel*

    M. Bakhla, NIFFT Ranchi

36. *Investigating the effect of FCAW welding process on microstructure and mechanical properties of IS 2062, E550BR welded steel*

    V. Kumar, Aryabhatta Knowledge University

37. *Effect of heat assistance through TIG preheating in the weld quality of Friction Stir Welded (FSW) AA2024 aluminum alloy*

    P.J. Teja, IIT Bhilai

38. *Experimental and Numerical analyses of uniaxial tensile test of automotive grade anisotropic sheet materials*

    A. Kumar, IIT Roorkee

39. Development of Aluminium matrix composite with $TiAl_3$ reinforcement using Ex-situ stir-casting route

    I. Hussain, IIT Bhilai

40. Synthesis and characterization of nano-La_2O_3 *dispersed ferritic steel consolidated by spark plasma sintering*

    A. Kumar, IIT Kanpur

41. *Organ-on-a-Chip: Mimicking Human Organ on a Microchip using Additive Manufacturing*

    B. Appalanaidu, IIT Roorkee

42. *A new physical based framework capturing the role of dynamic strain aging on work hardening behavior of an Al-Mg alloy*

    S. Samanta,IIT Roorkee

43. *A comprehensive study on the implications of cluster characteristics on work hardening, strain rate sensitivity, formability and paint-bake response of AA 6082*

    J.R. Sahoo, IIT Roorkee

44. *Influence of process variable on tensile strength of 316L stainless steel parts processed via selective laser melting*

    M. Pant, NIT Delhi

45. *Study on superplastic behavior of friction stir processed AZ91 magnesium alloy*

    M.I. Hussain, IIT Roorkee

46. *Hardening Behaviour of Pellets Prepared from a Novel Combination of Rare Multimetallic Magnetite Ore and Binder*

    B. Mishra, IIT BHU

47. *Design Criteria for the interstitial CoCrFeMnNi High Entropy Alloy*

    S. Sharma, IIT Roorkee

48. *Development of Gradient Microstructure and Controlled Mechanical Property by High Pressure Torsion in a Hypereutectic Al-Si Alloy*

    K. Singh, IIT Jodhpur

49. *Effect of Different Types of Molds on the Fluidity of A356 Aluminum Alloy*

    D.S. Patel, MANIT Bhopal

50. *Bainitic transformation in steel via surface mechanical attrition treatment at room temperature*

    L.K. Katiyar, MANIT Bhopal

51. Study on microstructural and mechanical properties of friction stir processed AA5083-SiC nanocomposites

    G. Rajan, IIT Roorkee

52. *Improvement in surface properties of AISI 8620 steel through tungsten inert gas arcing process*

    S. Balbande, IIT Roorkee

53. *Synthesis and characterization of copper oxide nanoparticles and their applications in nematic liquid crystals*

    M. Jaiswal, University of Allahabad

54. *Additive manufacturing of Stellite 6 alloy*

    Md S. Ansari, IIT Roorkee

Materials for Sustainability

1. *Synthesis of nanoencapsulated phase change materials (nPCMs) to generate slurry as a heat transfer fluid*

    A. Yadav, IIT Roorkee

2. *Characteristics of wear and corrosion behaviour for Ti- X%Mo laser cladding on SS316L stainless steel in simulated body fluid*

    S. Kotyal, College of Engineering, Pune, India

3. *Modern recycling and applications of aluminium dross*

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