

## Completed Projects FY 2021-22

S.No.	Project Title
<b>Collaborative projects</b>	
1	Investigation on hydrogen trapping characteristics of precipitate/matrix interface in microalloyed steel.(CLP-0206)
2	Effect of microstructure evolution in weld heat affected zone on fracture toughness and fatigue of API steel (X70 / X80) weld joints
3	Replacement of bentonite with alternative binder for iron ore pelletization (Phase 1)
4	Optimization and performance evaluation of coking Coal washery through modelling and simulation analysis.
<b>Consultancy projects</b>	
5	Development of Indigenous Technology for Production of sodium Metal at Commercial Scale
<b>Grant in aid projects</b>	
6	upscaling(to 10 tons per day) of red mud containing geopolymers paving blocks process
7	To develop an effective extraction and separation technology to selectively extract rare earth elements - Erbium (Er), Terbium (Tb), Europium (Eu), Praseodymium (Pr) Neodymium (Nd) and Dysprosium (Dy) from WEEE (Waste Electrical and Electronic Equipments)
8	Determination of Anisotropic Elastic Constants and Anisotropic Yield Parameters for Zr 2.5% Nb Pressure Tubes.
9	Development of Magnetostrictive Sensing Device for Structural Integrity Evaluation of Pipes
10	Preparation of Detailed Project Report(DPR) for technological intervention through Technology Facility Centre(TFC) at five numbers of Bell and Brass metal clusters
11	Development of a process for refining of commercial magnesium Metal through Vacuum distillation
<b>Major Lab projects</b>	
12	Production of Fe-Ni/Co-Mo metallic alloy & alumina rich slag from Ni-Mo/Co-Mo
13	Development and commercialization of Eco-friendly reagents for limestone and sillimanite flotation
14	Development of close loop process for the recycling of metals/materials from e-waste

15	Preparation of Coke from non-coking coal
<b>Inhouse projects</b>	
16	Development of Low Carbon Bainitic Steels (Module-I)(Module II)(Module III)
17	Microstructural evolution and deformation behaviour of high entropy alloys at ambient and sub-ambient temperatures (Module 1)
18	High Temperature Crack Growth of Cr-Mo Steels
19	Development of carbon based filler immobilized mixed matrix membrane for separation of Heavy Toxic Metals (Focus on Nuclear metals) from dilute effluent/leach solution-(Module-1)
20	Development of inorganic-organic hybrid geopolymers (Module-I)(Module II)
21	Rational Design of Solvent System: A Novel Approach for Recycling Metals from leach solution of Cathode Materials of Lithium-ion Batteries by Solvent extraction.(Module I: Studies on physico-chemical behavior of amines (pri,sec,tert and quart amines)and organophoric compounds (Phosphoric,phosphonic and phosphinic acids) for the solvent extraction and separation of Li,Co,Ni and Mn.)
22	Development of high efficiency Tin Selenide based Thermoelectric and optically tunable coatings for alternative energy harvesting from different industrial applications (Module I)
23	Scaling up of the process for the production of iron powder from waste iron oxide fines/slimes using hydrogen gas /natural gas
24	Development of melting-casting facilities and optimization of melting & casting parameters for 3rd generation Al-Li alloys.
25	Characterization of microbubbles and its subsequent application in fine particle separation
26	Determining the process route parameters of the formation of stable Face Centered Cubic Titanium
27	Precipitation hardened compositionally complex Ni-based alloys aided with HDI strengthening
28	Effect of Electrode Composition on the Mechanical and Corrosion Behaviour of Welded Duplex Stainless Steel in Corrosive Environments.
29	Effect of deformation induced martensite and dislocation density on the hydrogen permeation and hydrogen embrittlement of austenitic steels
30	Discerning the individual and synergistic effect of carbide inhibitors on austenite retention and stability in medium manganese advanced high strength steels.
31	Neural network-based sensitivity analysis and performance optimization of carbon recovery from Blast furnace and plant sludge using froth flotation - A step towards Waste-to-Wealth management.

32	Understanding the phenomenon and enhancement of Anti-icing properties of HVOF deposited coating.
33	Extraction and recovery of copper from lean grade chalcopyrite
34	â€˜Study of Amorphous magnetic alloy flakes for Microwave Absorbing Materials (2-18 GHz)
35	Numerical modelling of heat transfer and fluid flow in Selective Laser Melting (SLM) of SS316L
36	Mitigation of galvanizability of steel surface through adoption of sol-gel pre-coating and improvement in corrosion resistance of galvanizing coating through post intercalated ion conversion method
37	Multi Physics and Heat treatment Simulation of Additive Manufacturing Process for property prediction of SS316L
38	Synthesis and Development of Al-Si-Cu-N Nanocomposite Coatings for Antibacterial Applications
39	E-ProjectView-One Window for Profiling all Project related Information (Phase I)
<b>Sponsored projects</b>	
40	Metallurgical and Fractographic Examination of the SS304LN and Its Weld Tested Under Cyclic and Monotonic Loading in Air/Water Environment
41	AUSC-5 Evaluation of fracture and fatigue crack growth (FCG) in 10Cr- Alloy 617 BMW weld joint.
42	AUSC-6 Evaluation of fracture and fatigue crack growth (FCG) behaviour of SS304 Hcu base material
43	Microstructural and mechanical property evaluation of new and used CBC components
44	Development of high strength Zn-based biodegradable alloys for orthopedic applications
45	Extraction of rare earth elements from granulated blast furnace slag and evaluation of treated material for possible applications
46	Investigations of Fracture and Fatigue Crack Growth Rate Behaviour of Aero Engine Fan Disk of Ti-6Al-4V Alloy
47	Characterization of Ores, Minerals, Fluxes, granulated BF slag, LD slag, Fe alloy Slag and Fly ash" in terms of chemical composites on, phase analysis, optical & thermal properties
48	Coal Characteristics study
49	Chemical Characterisation for the grade declaration of coal
50	Development of Rapidly Quenched Fe-based Glassy Ribbons for Evaluation of Hydrogen Permeation (SSP-1210)
51	Study on reducibility index of iron ore pellet
52	To explore product development from waste alumino-silicate fibre material
53	Development of thicker section (> 6 mm) abrasion resistance grade steel with relatively higher coiling temperature

54	Assessment of Cr-Mo steel welding joints by NDE methods
55	De-Siliconization of High Silicon Ferro Chrome in 50 kVA EAF
56	Technology for Process Improvement in Degreasing, Brightening & Passivation Process of Cartridge Case manufacturing of 7.62mm M-80, 7.62mm A-7, 5.56mm & 12.7mm SA Ammunition and process improvement in cleaning & polishing operation of 5.56mm Bullet manufacturing
57	Mechanical and micro-structure assessment of Centre Buffer Coupler (CBC)
58	Studies on beneficiation of bauxite samples
59	Metallurgical failure investigation of penstock steel
60	Continuous pilot scale reverse flotation of 15 tons iron ore
61	Studies on cyclic corrosion behaviour of coated steel samples
62	Failure Analysis of Hydrogen Generation Unit-3 (HGU-3) Reformer Tube (SSP 1269)
63	Evaluation of Binders Properties for Pelletization
64	Development of graphene-based epoxy paint for marine application
65	Study on slag metal interaction in induction furnace
66	SSP 1279) Root cause analysis of breakage of runner bucket of unit#1