

**List of new projects received during the year 2018-19**

S.No.	Project Title	Institution	Principal Investigator & Qualification.	Objectives of the project	Project Cost & Duration	Remarks of the Committee
1.	Use of Iron Filings as a full replacement of sand in the manufacturing of concrete	Department of Civil Engineering Sharda University 32-34, Knowledge Park-III, Greater Noida – 201306	Dr. Satyaprakash Professor  Phone: 9811723406	1. To study the effect of replacement of fine aggregate by metal waste such as Iron filing in production of concrete 2. To study the internal structure of the resultant concrete and compare the same with that of the normal concrete 3. To test the resultant concrete a. when subjected to compression b. when subjected to tension c. when subjected to drop of heavy materials 4. To study the a. durability of the concrete b. abrasion of the surface 5. To study the corrosive behaviour of iron filing concrete and its effect on the durability 6. To study the permeability of the resultant concrete and its effect on the strength of the concrete	Rs. 30.42325 lakh  2 years	<b>Lacks novelty</b> <b>Repetition</b>  <b>Not recommended</b>
2.	Utilization of red mud and Induction Furnace Slag (IFS) for manufacture of paver blocks and ceramic foam bricks.	Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai – 600 119	Dr.V.Ganesh Kumar Scientist – E, Email: ganeshkumar@sathyabamauniversity.ac.in Mobile: +91 98414 72463; Ph: 044-2450 3308	Utilization of red mud and induction furnace steel slag for the manufacture of paver blocks and ceramic slag foam bricks by geopolymer route. a) Characterization of Red mud for its mineral and morphological properties. XRF, FESEM-EDAX, XRD, FT-IR in detailed. b) Characterization of Induction furnace steel slag for its mineral and morphological properties. XRF, FESEM-EDAX, XRD, FT-IR in detailed c) Strength evaluation using Compressive Testing, Flexural Strength, , Tensile splitting strength, Abrasion resistance, Water Absorption, etc., d) TCLP studies for paver blocks and ceramic foam bricks e) Durability f) Field Application Study by laying road using paver blocks.	Rs.123.668 lakh  3 years	JNARDDC status report awaited <b>Not recommended</b>
3.	Recovery of value added products from tailings lying at	CSIR – Central Institute of Mining and Fuel Research	U.S. Chattopadhyay, Principal Scientist	The main objective is to recover the value added products from tailings lying at coal washeriesthrough appropriate beneficiation techniques.	Rs. 92.9 Lakhs  2 years	Pertains to Ministry of Coal

	coking coal washeries.	Digwadih Campus, P.O. FRI, Dhanbad, Jharkhand, 828108	Email:- <a href="mailto:uscimfr@gmail.com">uscimfr@gmail.com</a> Mb.No. 9431746760			
4.	An energy efficient route to develop of wear resistant alloys for mining industries using microwave melting	Indian Institute of Technology Mandi, Kamand, Mandi, Himachal Pradesh: 175005	Dr. Sunny Zafar, Assistant Professor Email - <a href="mailto:sunnyzafar@iitmandi.ac.in">sunnyzafar@iitmandi.ac.in</a> & Mb. NO. +91 7579087032 Tel(O): +91 1905267268	<ul style="list-style-type: none"> <li>• To develop wear resistant alloys using microwave melting.</li> <li>• To explore the physics of microwave melting process for developing wear resistant alloys using detailed study of the temperature profiles, microstructure and mechanical properties of the developed alloys and relating it with the process parameters.</li> <li>• To carry out detailed tribological studies of the developed alloys in conditions faced by mining equipment.</li> <li>• To compare performance of wear resistant alloys obtained via microwave melting process vis-à-vis conventional melting processes.</li> </ul>	Rs. 49.388 lakh 3 years	Not focused Vague Objectives not focused in terms of thrust area <b>Not recommended</b>
5.	Design and development of an Integrated System using Pattern Recognition and Machine Learning Technique for Online Quality Monitoring of Iron Ores	National Institute of Technology-Rourkela(Odisha)	Amit Kumar Gorai, Associate Professor, Email: <a href="mailto:amitorai@yahoo.co.uk">amitorai@yahoo.co.uk</a> Mob. 7749006070	<ul style="list-style-type: none"> <li>• Development of a machine-vision-based algorithm for classification of iron ores.</li> <li>• Development of a machine-vision-based algorithm for grade predictions of iron ores.</li> <li>• Design of an integrated system for online quality monitoring of iron ores in the mineral industry</li> </ul>	Rs. 34.208 lakh 3 years	<b>Theoretical in nature</b> <b>Not recommended</b>
6.	Evaluation of ground behavior in tunnel and underground excavations using TDR and machine learning	National Institute of Technology Rourkela-ODISHA.	Prof. Suchismita Chinnara Assistant Professor Ph.No.(0661)2462361,	<ol style="list-style-type: none"> <li>1. To evaluate the ground deformation in underground mines using Time domain Reflectometry(TDR).</li> <li>2. To develop suitable wireless communication modules for underground mines for online monitoring.</li> <li>3. To develop a prototype using machine</li> </ol>	Rs. 33Lakh 2 years	Similar nature of project is under implementation Not Recommended

	techniques		9437116795 E-mail: suchismita@nit rkl.ac.in, suchi.nitrkl@g mail.com	learning algorithms for storing of data and pre- warning before failure.		
7.	Arsenic removal as a pretreatment of metal extraction	CSIR-Institute of Minerals and Materials Technology, Bhubaneswar- 751013	Dr. Barsha Dash Scientist Email: barshadash@i mmt.res.in	Primary The primary objective is to remove Arsenic from the copper concentrate before regular metallurgical operations.  Secondary The secondary objective is to see the feasibility of removal of Bi, Pb and silica from the concentrate/ores	Rs. 23 lakh (Rounded)  2 years	Recommended
8.	DEVELOPMENT OF A METHODOLOGY TO ESTABLISH DYNAMIC ROYALTY RATES FOR SOME MAJOR MINERALS	Indian Institute of Technology, Kharagpur	Dr. KaushikDey, Assistant Professor Email: kausdey<kaus dey@mining	1) Development of a methodology to establish dynamic royalty rates of some of the major metallic minerals (at this point, it is proposed for Chromium, copper, Lead-Zinc ores) of India for maximizing the revenue collection and enhancement of private investment opportunity. 2) Development of a methodology to establish dynamic royalty rates for different grades of Iron ores. 3) Establishing the role of by-products on dynamic royalty rate 4) Establishing an alternative method of royalty fixation for iron ore in consideration of its export potential provided time and funding permits.	Rs. 43.2 lakhs  3 years	Not the thrust area of S&T program  <b>Not Recommended</b>
9.	INVESTIGATION OF DIOXIN EMISSION FROM TITANIUM INDUSTRIES VIA CHLORIDE ROUTE AND ITS FATE IN THE ENVIRONMENT	CSIR- National Institute for Interdisciplinary Science & Technology (CSIR-NIIST)- Kerala – 695 019	Dr. K. P. Prathish Scientist Mob: 9447798707 Email: prathishkp@ni ist.res.in, prathishkp@g mail.com	1. Identification of possible dioxin emission vectors at TiO <sub>2</sub> pigment production plant  2. Establishing of dioxin & dl- PCB bioassay for the rapid screening of samples  3. Determination of emission factor of dioxins and dioxin- like PCBs and preparing an Inventory of annual dioxin emission from TiO <sub>2</sub> pigment production plants	Rs. 149.65 lakh  3 years	Theoretical in nature Not Recommended

				<p>4. Screening of dioxin levels in animal origin samples within 10 Km radius of the KMML pigment production plant</p> <p>5. Formulation of recommendations regarding source reduction of dioxin emission</p>		
10.	ENSURING SECURITY IN MINING SITES THROUGH INTELLIGENT TECHNIQUE	FRANCIS XAVIER ENGINEERING COLLEGE, Tirunelveli-627005	Dr.I.Jeena Jacob b. Associate Professor Phone Off : 0462-2502283, Res:9894083125 Mobile: 9894083125 Email : jeni.neha@gmail.com	<ul style="list-style-type: none"> <li>To formulate a system to monitor the mines based on ZIGBEE technology by utilising wireless sensor network and imaging technologies.</li> <li>To make a system to intelligently interpret the sensor outputs and help the administrators to make the decisions</li> </ul>	Rs. 44.80 Lakhs  3 Years	Pertains to DGMS  Not Recommended
11.	Rational Design of Longwall Panels under High Depth of Cover	Indian Institute of Technology (Banaras Hindu University) Varanasi - 221005	Dr. Gauri Shankar Prasad Singh, Associate Professor e mail: gpsingh.min@iitbhu.ac.in, gpsingh@yahoo.com, Mobile No. 9451828337	(i) to understand the influence of face length on the loading mechanism, resultant severity of damage and unit cost of extraction in deep longwall workings (ii) to work out an integrated approach for assessment of optimum face length combining geomechanical effects of face damage, cost of production and productivity (iii) to examine the mechanism of loading and failure mechanism of barrier pillars under large confining stresses. (iv) to develop understanding of roof-pillar interaction for improved serviceability of gate roads and safe performance of chain pillars under different loading and pillar system combinations	Rs. 210.73 Lakhs  3 years	Pertains to Ministry of Coal  Not recommended
12.	Development of concrete and Building Products using Iron Ore Tailing as Fine	CSIR-Central Building Research Institute, Roorkee -	Dr. Neeraj Jain Senior Scientist	<p>1. Collection of sample and other raw Materials</p> <p>2. Determination of physico-chemical characteristics of IOT samples and raw materials like river sand, coarse aggregates, cement etc.</p>	Rs. 46.011 Lakhs  3 years	Lacks novelty Pertains to Ministry of Steel Not recommended

	Aggregates		Phone: 01332-283431 (O), Mobile: 09897659639 E-mail: <a href="mailto:neerajest@rediffmail.com">neerajest@rediffmail.com</a>	3. Optimization of mix with different percentage of IOT as replacement of river sand for development of concrete (M30/M40 Grade) as per Indian Standard 4. Determination of engineering properties of control concrete and concrete designed using combination river sand and IOT at different level of replacement 5. Micro-structural and Durability studies of concretes 6. Development and testing of value added products like paver blocks/bricks as per Indian standard using IOT as fine aggregates 7. Preparation of final report		
13.	Investigation on flowing film concentration equipment to improve their efficiency for processing low-grade iron ore fines and tailings'	Indian Institute of Technology (Indian School of Mines) Dhanbad, Jharkhand 826004	Dr.Pankaj Kumar Jain Assistant Professor Department of Fuel and Mineral Engineering Email & Mobile No. <a href="mailto:panku@iiti-sm.ac.in">panku@iiti-sm.ac.in</a> , Mob: 7766904994	1. Density based separation using organic liquids a. To generate float – sink data reflecting density – grade distribution b. to estimate the operating cut densities of the beneficiation equipment 2. Developing a standardized procedure for the sink – float test-workof iron ore and and other high density minerals. 3. Application of knowledge of density – grade distribution and operating cut density to beneficiate iron ore fines and tailings spirals and Wilfley table 4. If necessary to do the design improvement of spirals and Wilfley table	Rs. 81.458 lakh  3 years	Resubmit to PERC with source of iron ore  Recommended
14.	Development of Radiation resistant metallic alloys for energy applications	Inter-University Accelerator Centre, ArunaAsaf Ali Marg, VasantKunj, New Delhi 110067	Name of PI: DrPawan Kumar Kulriya, Designation: Scientist E Email: <a href="mailto:pawaniuac@gmail.com">pawaniuac@gmail.com</a> , <a href="mailto:pawan@iuac.res.in">pawan@iuac.res.in</a> , Mobile No.:	Understanding the irradiation damage is critically important for identifying the prospective nuclear materials as local structural changes often alter chemical and physical properties or response to the irradiation damage. Here, we aim to investigate the structural stability of NiCo and NiCoCr solid solution alloy under fission fragment and alpha recoil bombardment. The following are the focused objectives of the proposed project a. In-situ structural studies on the NiCo and NiCoCr alloy under exposure to high energy heavy	Rs. 49.668 lakh  3 years	Pertains to DAE Not Recommended

			+91-8800389872	ions (at room temperature and at high temperature (800 C), similar to advance nuclear reactor environment).This study will be carried out using complementary advanced materials characterization techniques like in-situ XRD, and in-situ Raman facilities available at the materials science beam line of superconducting LINAC at Inter-University Accelerator Centre (IUAC) New Delhi. b. Dependence on electronic energy loss ( $S_e$ ) that corresponding to the fission fragments and ion fluence on the structural properties. c. To elucidate the mechanism for the observation of short range ordering (SRO), and its effect on the structural stability using x-ray absorption spectroscopy technique. d. Scientific understanding interaction of radiation with metallic alloys including alloy composition and microstructure, enabling materials design for advanced nuclear materials with extended performance.		
15.	Country-wide GIS-based prospectivity modelling of India for REE deposits.	Indian Institute of technology – Bombay,	Prof AlokPorwal Email <a href="mailto:aporwal@iitb.ac.in">aporwal@iitb.ac.in</a> Mobile +919167446928	Targeting and delineating zones potential for REE primary REE Deposits.	Rs.50.7408 lakh  3 years	Recommended
16.	Development of Process Technology for Beneficiation of Low Grade Bauxite Ore for Alumina Production	CSIR-National Metallurgical Laboratory Jamshedpur - 831007	DrShobhanaDeey Principal Scientist Email: <a href="mailto:sd@nmlindia.org">sd@nmlindia.org</a> Contact No. 09471117866	<ul style="list-style-type: none"> <li>Reduction of silica and iron in the low grade bauxite ore</li> <li>Improvement in the <math>Al_2O_3/SiO_2</math> ratio</li> <li>Development of process flowsheet through large scale/Pilot scale beneficiation</li> <li>Techno-economic feasibility study of the process</li> </ul>	Rs. 167.33 Lakhs  3 years	Repetition of already carried out project under S&T Not Recommended
17.	Investigation, Development and	NATIONAL INSTITUTE OF	Dr. Manoj Kumar Mishra	Aim and objectives: The aim of the investigation is to obtain the desired fragment with minimum	Rs. 46.051 lakh	Resubmit to PERC with consent from

	Optimisation of a comprehensive blast Design for hard rock mine incorporating rock mass quality, rock energy, explosive energy and fragmentation	TECHNOLOGY, ROURKELA-769 008	Associate Professor Office: 0661-2462602; Cell: 094374 08039 <a href="mailto:mkmishra@nit_rkl.ac.in">mkmishra@nit_rkl.ac.in</a> ; <a href="mailto:manojbf3@yahoo.com">manojbf3@yahoo.com</a>	external energy application as well as adverse effect, thus with improved economics in hard rock mines. The aim is proposed to be achieved by the following specific objectives (a) Determination and classification of Rock mass quality and rating of the iron ore mines (b) Determination of static and dynamic properties of the rock mass (c) Determination of strain energy of the rock mass (d) Determination of explosive energy necessary to loosen the rock mass (e) Design of blasting layout with variable explosive type/quantities, initiation points, blast parameters as burden, spacing, stemming height, etc. (f) Evaluation of the effect of above on fragmentation, vibration, fly rock and air over pressure (g) Optimisation of the different influencing parameters and development of model (h) Prediction of cost benefit analysis Detailed methodology	3 years	industry partner Recommended
18.	Acoustic Levitation, Translation and Mixing of Liquid Materials	National Institute of Technology, Mandi(HP)	Dr. ArpanGupta Assistant Professor Email:agupta@iitmandi.ac.in Mobile : +91-894900808	(i) To develop the facility of acoustic levitation for handling high-density materials (such as mercury) (ii) To provide the mobility to the levitated material for translation (iii) To mix two liquids drops (water and ethanol)in the acoustic levitated field. (iv) To perform numerical modeling/simulations to help design the experiments and validate results	Rs. 31.144 Lakhs  3 years	Theoretical in Nature Not recommended
19.	CHARACTERIZATION AND BENEFICIATION OF RARE	CSIR-National Metallurgical Laboratory-Jamshedpur-	Dr. M. K. Mohanta Senior Principal	➤ Critical characterisation specific to non-radiogenic REE and rare metal bearing minerals in carbonatite- alkali syenitic rock from AmbaDongar and adjacent area, gangue mineralogy and process	Rs. 3108.71 Lakhs	AMD and GSI already exploring the deposits. Not recommended

	METAL AND REE MINERALS FROM AMBA DONGAR CARBONATITE-ALKALI SYENITE SUITE OF ROCKS: AN INITIATIVE FOR STRATEGIC MINERAL	831007	Scientist Mineral Processing Division CSIR-National Metallurgical Laboratory Email: <a href="mailto:mohanta.nml@nic.in">mohanta.nml@nic.in</a> , <a href="mailto:mohanta@nmlindia.org">mohanta@nmlindia.org</a> Ph: +91-657-2349003, 2349002 (O) Mob: +91-9431382068	mineralogical evaluation for grade percent recovery ➤ Development of innovative strategy for liberation of fine grained strategic minerals without overgrinding ➤ Development of beneficiation strategy for rare-metal and REE phases and development of process flowsheet specific to carbonatite-alkali syenite from AmbaDongar area	3 years	
20.	ELECTRODIALYTIC RECOVERY OF HEAVY METALS AND RECYCLE PROCESS WATER IN MINING INDUSTRIES TO ACHIEVE ZERO LIQUID DISCHARGE	Indian Institute of Technology Roorkee	DrSujayChattopadhyay Email - <a href="mailto:sujaypt@iitr.ac.in">sujaypt@iitr.ac.in</a> Mobile No.- 9568189000	<ul style="list-style-type: none"> <li>Proposed project is going address an issue of safe earth</li> <li>The methodology can be implemented in all mining industries</li> <li>Develop a novel and safe route to treat a complex AMD stream</li> <li>The pilot plant will mimic the technological and economic feasibility of treating AMD stream</li> <li>The technology will give birth to treatment technique of many more complex streams</li> <li>It will provide the design knowhow to develop industrial plants for different AMD streams</li> </ul>	Rs.72.0 Lakhs  3 years	Lacks Novelty Repetitive work Not recommended
21.	Performance Enhancement and Emission Control of Mining Machinery through the Utilization Nanolubricants	Indian Institute of Technology(Indian School of Mines), Dhanbad  & Lovely Professional	Dr. AnkitKotia, Assistant Contact no.: +91 7549009017 (m) E-mail: <a href="mailto:ankitkotia@gmail.com">ankitkotia@gmail.com</a> ;	<ul style="list-style-type: none"> <li>Analysis on the friction energy losses in mining machinery.</li> <li>Determination and selection of key lubrication effectiveness parameters for present mining machinery.</li> <li>Determination of suitable nanoparticles additive and surfactants</li> <li>Synthesis and thermophysical testing of</li> </ul>	Rs. 47 Lakhs  3 years	Theoretical in nature Outcome not as per thrust area of S&T Not recommended



		University		nanolubricants. <ul style="list-style-type: none"> <li>•Tribological testing of nanolubricant and contributing mechanism analysis.</li> <li>• Testing of the performance of mining machinery under nanolubricated condition.</li> <li>• Analysis on the optimum nanolubricant for most efficient and eco-friendly operation.</li> </ul>		
22.	DEVELOPMENT OF A BROAD-BAND TUNABLE SUB-THz IMAGING SYSTEM FOR CRACK IDENTIFICATION IN MINES : A COMPACT RELIABLE & ROOM TEMPERATURE SYSTEM FOR MINE SAFETY	ADAMAS UNIVERSITY KOLKATA 700126, WEST BENGAL  NIT Rourkela	Dr. MOUMITA MUKHERJEE Associate Professor Contact: +91-9836864228 , E-mail: <a href="mailto:mm.adamasuniv@gmail.com">mm.adamasuniv@gmail.com</a> , <a href="mailto:mm_drdo@yahoo.com">mm_drdo@yahoo.com</a>	1. To evaluate the T-Ray reflection /absorption/transmission fingerprint of fissure/crack in Coal & Metal Mines by developing a unique non-invasive Electromagnetic and thermal T-Ray imaging system with solid-state T-Ray source & detector array for compact and low-cost solution to the increasing demand of Mining safety issues. 2. To develop an in-silico non-destructive imaging tool with indigenously developed MATLAB based device (source & detector) design simulator integrated with imaging algorithm and 3D cracked sample model with COMSOL Multiphysics simulator. 3. To develop a prototype using suitable optimized T-Ray Source, detector array, Vector-Network Analyzer and PC based thermal imaging tool for real-time crack / fissure identification in Mines	Rs. 25.08 Lakh  3 years	Pertains to DGMS Not recommended
23.	Development of In-Situ Drilling and Leaching Technology for Eco-Friendly Extraction of Chromium from Chromite Ore.	Indian Institute of Technology, HauzKhas, New Delhi-110016.	Ashok N.Bhaskarwar, Professor  <a href="mailto:ashoknb@chemical.iitd.ernet.in">ashoknb@chemical.iitd.ernet.in</a> / <a href="mailto:ashoknbhaskarwar@yahoo.co.in">ashoknbhaskarwar@yahoo.co.in</a> & 9953535266/011-2659-6693	1. Investigation on in-situ crushing and leaching technique for Chromite ore with possible implementation at Sukinda Mines, Jajpur. 2. Development of a concentric cylindrical mining equipment for drilling and extraction of Chromite. 3. Studies on reduction of Cr(VI) contamination during mining and beneficiation process. 4. Development of a process flowsheet mining and beneficiation process of Chromite ore. 5. Characterization and quantification of Cr(IV) in feed, product, and waste.	Rs. 87.8709 lakh  3 years	Resubmit to PERC with industry partner Recommended

24.	Development of a Low-cost Portable Optical Reflectance Spectrometer for Mining and Mineralogy is submitted herewith.	Indian Institute of Technology – Madras,	Dr. Sivarama Krishnan Assistant Professor phone: +91 – 44 – 225 4857, +91 9445 224291 E-mail: srkrishnan@iit m.ac.in	1. Develop a handheld low-cost optical spectrometer for reflectance and fluorescence analysis in the 350 - 800 nm spectra window, with a bill of materials less than Rs. 30,000/- 2. Develop a rugged device for remote field application which can run on battery power with possible connectivity to solar charging. 3. Develop a suitable color matching and spectrometry scheme with this device for identification of minerals on site and live. 4. Implement schema for a database on the cloud which this spectrometer can link to via a mobile computing device such as a mobile phone or tablet.	Rs. 49.72 Lakhs  3 years	Resubmit to PERC with wider spectra window in range of 350-2300 nm Recommended
25.	Smart Biokit for safety of mining personnel	St. Peter's Institute of Higher Education and Research Avadi, Chennai-600 054	Dr.K.Kantharaj Dean & HOD Email: <a href="mailto:kantharaj@gmail.com">kantharaj@gmail.com</a> , Mob.- 380617552	<ul style="list-style-type: none"> <li>• Monitor the biological parameters of the mining people using our own network</li> <li>• Zigbee technology implementation.</li> <li>• Miniaturization of the biokit.</li> </ul>	Rs. 5.331 lakh  3 years	Pertains to DGMS Not Recommended
26.	Sustainable utilization of quarry wastes and steel slags for foundry applications	Andhra University, Visakhapatnam	PROF BHARGAVA RAMA MOHAN RAO NARSIPALLI Email : <a href="mailto:nrmrbhargava@rediffmail.com">nrmrbhargava@rediffmail.com</a> Phone: 0891-2844915 Mobile: 9494006633	<ul style="list-style-type: none"> <li>• Utilization of quarry wastes as silica sand replacement</li> <li>• Use of steel slags as a hardener in self setting systems</li> <li>• Use of hardener in Nano sizes and nano quantities for improved collapsibility</li> </ul>	Rs. 23.16 lakh  2 years	Lacks novelty Repetitive work Not recommended
27.	Development of synthesis process of rare earth based nanocomposites	CSIR-Institute of Minerals & Materials Technology (Council of	Dr. Mamata Mohapatra Assistant Prof. Telephone:	The present proposed research is oriented for development of potential process for synthesis of rare earths based nano oxides or ferrites using mixture of low grade resources and scrap magnets from industrial sites or discarded electronic products	Rs. 68.68 lakh  3 years	Resubmit to PERC with industry partner Recommended

	<p>from secondary sources: possible application as microwave absorbing material</p>	<p>Scientific and Industrial Research) Bhubaneswar-751013 Odisha, INDIA</p>	<p>Office: 91-674-2379272, Fax: 91-674-2567160          Personal: +91-9437260688          mamata@imm t.res.in,          mamatamohapatra76@gmail.com,          mamatamohapatra@yahoo.com</p>	<p>into valuable pure or mixed rare earth and transition metal oxidic/ferrite materials and further utilisation them for aerospace application. Material for stealth application with both high dielectric and magnetic loss has attracted a lot of attention, which always exhibit strong microwave absorption properties. In this direction, iron riched 10 alloy/oxides and ferrite having rare earth doped or composites has shown promising microwave-absorbing properties. Electromagnetic parameters of ferrite type material can be tuned by introducing proper concentration and right kind of rare earth which contribute to the improvement of the microwave-absorbing performance of the materials. Other hand it also reduced electromagnetic pollution. Electromagnetic absorbing materials research and development of more and more cause for concern, a new type of absorbing material after another. Secondary solid wastes such as spent/scrap magnets, waste PCBS, spent batteries, waste phosphors etc. are the potential resources of rare earth elements as well as of other valuable metals. Presently recycling secondary sources of rare earth can be a possible solution to the supplychain problems, serious economical and ecological challenges to meet demand of rare earth in various application. Though there has been significant level of research effort on recycling of rare earth has well documented however due to process intensification, testing and actual industrial scale utilisation of such process are limit. In metallurgical extraction of these metals, the challenge usually lies with dealing with the impurities that accompany the typical-recyclates. Again, each application of REEs within complex products has its own specific characteristics and poses differentchallenges to the recycling process. As a result, product-specific solutions are necessary in most cases. To date, only very small quantities of rare earth elements (estimated at 1 percent) have been recycled from pre-consumer scrap. Thus , the</p>		
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				<p>overall objective of this proposed project will be :</p> <ul style="list-style-type: none"> <li>• To develop a scalable, low-cost hydrometallurgical method of recovery metal ion with desired composition from a hybrid secondary sources( low grade ore and secondary sources of Sm or Nd) using ligand assisted leaching routes</li> <li>• Synthesis of nano material(ferrites or oxides) from leached solution by photo orultra-sonicated assisted route</li> <li>• Evaluation of microwave absorption properties of the materials for real application</li> </ul>		
28.	Methane Separation from Coalbed Methane by ClathrateHydrate Formation	Indian Institute of Technology Kanpur UP 208016, India	Dr. P. K. Panigrahi Professor Email Id : <a href="mailto:panig@iitk.ac.in">panig@iitk.ac.in</a> Landline no.: +91-512-2597686 Mobile: 7607005578	<p>Hydrate formation is being considered as a potential separation and storage technology ofCBM.However, the formation of hydrate is a slow process that requires high pressure, low temperature environment. Goal of the proposed research is to develop a viable hydrate-based technology for CBM utilization. The proposed research will study the use of THF as a thermodynamic promoter that will reduce the hydrate formation pressure. Further, the effects of sodium dodecyl sulphate (SDS) will be evaluated as a kinetic promoter for methane hydrate production. Finally, hydrate will be formed within a porous matrix enhancing the heat transfer and thus increasing the hydrate formation rate. Overall the proposed research attempts to reduce the hydrate formation pressure and enhance the hydrate formation rate paving the way for using the hydrate formation as a separation and storage technology for CBM.The proposal also includes a detailedmathematical model and numerical simulation for a parametric study of the above phenomena.</p> <ol style="list-style-type: none"> <li>1. Experimental study of CH<sub>4</sub> separation from CH<sub>4</sub>-N<sub>2</sub> mixture equivalent to coal bed methane via hydrate formation</li> <li>2. Evaluation of thermodynamic (THF) and kinetic (SDS) promoters for CH<sub>4</sub> separation from</li> </ol>	Rs. 131.012 lakh  3 years	Pertains to Ministry of Coal Not recommended

				<p>CH<sub>4</sub>-N<sub>2</sub> mixture</p> <p>3. Investigation of heat and mass transfer process during CH<sub>4</sub> separation from CH<sub>4</sub>-N<sub>2</sub> mixture via CH<sub>4</sub>-hydrate formation in clear and porous media</p> <p>4. Numerical simulation of CH<sub>4</sub> separation from CH<sub>4</sub>-N<sub>2</sub> mixture equivalent to coal bed methane via hydrate formation.</p>		
29.	Assessment of work related musculoskeletal disorders among mine workers and development of protocol for mitigation at workplace	National Institute of Miners' Health, JNARDDC Campus, Amravati Road, Wadi, Nagpur – 440023	Dr. SarangDhatra k Asst. Director Ph- 07104-224494/95. web site- <a href="http://www.nimh.gov.in">www.nimh.gov.in</a>	<p>(1) To determine risk factors and prevalence of WMSDs among mine workers</p> <p>(2) To recommend mitigative measures to promote more effective WMSD risk management at workplaces</p>	Rs. 55 lakhs  2 years	Pertains to Ministry of Health Not recommended
30.	DEVELOPMENT OF NANO-STRENGTHENED MARTENSITIC BORON-NITROGEN (MARBN) STEEL	National Institute of Technology Warangal Warangal-506004	Dr. G. V. S. Nageswara Rao, Professor Telephone: 0870-2462521 Mobile: 8332969382 Email: gvsnr@nitw.ac.in; nr_gvs@yahoo.com	The objectives of the present research proposal includes: (i) Development of nano-strengthened martensitic boron-nitrogen steel capable of meeting advanced power plant and other high temperature components requirement; (ii) Melting, processing and characterization; and (iii) Evaluation of mechanical properties	Rs. 473.059 Lakhs  3 years	Pertains to Ministry of Steel Not recommended
31.	An Artificial Neural Network Based Study To Optimize Fragmentation And Minimize	CSIR-Central Institute of Mining and Fuel Research, Unit 1, Regional Centre, 17/C,	Dr. Ratnesh Trivedi, Principal Scientist, Mobile :	<p>(1) To evaluate the effect of geo-mechanical properties of Iron ore formations on mean fragment (50 % passing) size and fines.</p> <p>(2) To evaluate and assess the effect of Geo-technical parameters of Iron ore formations on mean fragment size and fines.</p>	Rs. 66 Lakhs  3 years	Pertains to Ministry of Iron & Steel CSIR Not recommended

	Fines Due To Blasting In Iron Ore Mines	Telankhedi area, Civil Lines, Nagpur 440001	08600043516; 09470570982. E mail: <a href="mailto:ratneshtrivedicimfr@gmail.com">ratneshtrivedicimfr@gmail.com</a> ; <a href="mailto:ratneshtrivedi@cimfr.nic.in">ratneshtrivedi@cimfr.nic.in</a> .	(3) To evaluate the effect of blast design parameters on mean fragment size and fines. (4) To evaluate the effect of explosive parameters such as density and velocity of detonation on mean fragment size and fines in Iron ore mines.		
32.	Elevated-temperature tribology of cast aluminium-rare earth alloys	Indian Institute of Technology Bhubaneswar Bhubaneswar, Odisha - 752050	Dr. AnimeshMandal Assistant Professor Mobile: +91-9583428082 E-mail: <a href="mailto:animesh@iitbbs.ac.in">animesh@iitbbs.ac.in</a>	1. To develop a rare earth containing cast aluminium alloys with superior tribological properties that existing aluminium alloys at elevated temperatures up to 300 °C. 2. To establish microstructure-wear-wear mechanism maps at room temperature as well as at elevated temperatures 3. To develop FEM model capable of simulating wear both at room temperature and at elevated temperatures.	Rs. 30.314 Lakhs  3 years	Lacks Novelty Repetitive work Not recommended
33.	Development of An Economically Viable Process for the Recovery of Rare Earth Elements from Indian Bauxite residueis	DayanandaSagar College of Engineering/ DayanandaSagar Institutions	Dr. Remya P.N Professor MAIL: <a href="mailto:pnremya@gmail.com">pnremya@gmail.com</a> MOBILE:+919902083537	<ul style="list-style-type: none"> <li>Collection and Analysis of Indian Red mud</li> <li>Market analysis of REEs present in Indian red mud</li> <li>Literature review and Economic feasibility analysis by Cost analysis of available techniques and market analysis of REEs</li> <li>Selection of an economically viable process</li> <li>Lab scale demonstration of feasible process for the recovery of rare earth elements</li> <li>Optimization of the process</li> <li>Economic feasibility of the optimized process using Monte Carlo simulation</li> <li>Explore the feasibility of value addition to recovered products</li> </ul>	Rs. 30.753 lakhs 3 years	Similar work is being carried out at JNARDDC Not recommended
34.	Evaluation of in-vivo and in vitro models for	National Institute of Miners' Health,	Dr. ShubhangiPinagle, Ph.D.,	<ul style="list-style-type: none"> <li>Characterization of mining dust samples from Central India regions.</li> </ul>	Rs. 84.27 Lakhs 3 years	Pertains to Ministry of Health Not recommended

	prediction of Ischemic Stroke in mine workers	JNARDDC Campus, Amravati Road, Wadi,Nagpur – 440 023	M.Sc. Assistant Director & Head OFF:07104-224494,95 Mob No:9960340692 Email: <a href="mailto:skpingle@nimh.gov.in">skpingle@nimh.gov.in</a> <a href="mailto:pingle.shubhangi@gmail.com">pingle.shubhangi@gmail.com</a>	<ul style="list-style-type: none"> <li>To develop in vitro model using human neuronal cell line and in vivo model using animal for stroke by exposing different dose time interval of mining dust samples.</li> <li>Evaluation of the toxicity profile by measuring oxidative stress, cytotoxicity, histology, genotoxicity and immunotoxicity parameters in Invivo&amp; In-vitro model.</li> </ul>		
35.	Designing and development of Lateral flow system for rapid detection of Noise Induced Hearing Loss	National Institute of Miners' Health, JNARDDC Campus, Amravati Road, Wadi,Nagpur – 440 023	Dr. ShubhangiPingle, Ph.D., M.Sc. Assistant Director & Head OFF:07104-224494,95 Mob No:9960340692 Email: <a href="mailto:skpingle@nimh.gov.in">skpingle@nimh.gov.in</a> <a href="mailto:pingle.shubhangi@gmail.com">pingle.shubhangi@gmail.com</a>	<p>This proposed study focused on developing a solid phase, rapid-test LFI assay/kit base technology for the early and prognostic diagnosis of the NIHL with the previous evaluated most prevalent biomarker for assessment of auditory loss in MINERS.</p> <ol style="list-style-type: none"> <li>To construct express and purify the Myosin/Prestin/ alpha tectorin/Cadherin23 protein and characterize.</li> <li>To develop murine antibody against the Protein Target and its subsequent purification.</li> <li>To develop a prototype of ELISA with all the reagents developed.</li> <li>Western Blot for analysing the efficacy / specificity of Mabs to Proteins.</li> <li>To screen the real time patient and MINERS sample for assessment of the reagent developed</li> <li>Development of suitable technologies such as LFI for further commercialization</li> </ol>	Rs. 69.75 Lakhs 3 years	Pertains to Ministry of Health Not recommended
36.	Selective Recognition of G-Quadruplexes by	National Institute of Miners' Health,	Dr. ShubhangiPingle, Ph.D.,	The strong association between silica dust which have possible implications in miners lung diseases transforming into silicosis, have lack of	Rs. 119.892Lakhs	Pertains to Ministry of Health Not recommended

	a Smart Dye for preventive approach and early detection of Silicosis”	JNARDDC Campus, Amravati Road, Wadi,Nagpur – 440 023	M.Sc. Assistant Director &Head OFF:07104-224494,95 Mob No:9960340692 Email: <a href="mailto:skpingle@nimh.gov.in">skpingle@nimh.gov.in</a> <a href="mailto:pingle.shubhangi@gmail.com">pingle.shubhangi@gmail.com</a>	commendable studies on prediagnosis of disease in Indian scenario, attempt to study promising biomarkers in the proposed project with following objectives; <ul style="list-style-type: none"> <li>• Develop a novel smart dye-based fluorescence method for selective recognition of quadruplex DNA and telomere length changes.</li> <li>• Assessment of quadruplex nucleic acids and telomere length dynamics by signature fluorescence spectra as a biomarker for screening silicosis.</li> <li>• Identification of G-rich sequences in telomere region of the silicosis patients and categorize according to severity of disease.</li> <li>• To understand the mechanism of silica-induced toxicity and early detection of silicosis in miners</li> </ul>	3 years	
37.	Development of ultra-high tensile strength nano-pearlitic steel wires with optimal fatigue properties for mining equipments	CSIR – National Metallurgical Laboratory, Jamshedpur – 831007, Jharkhand	Dr. SandipGhosh Chowdhury  Email <a href="mailto:sgc@nmlindia.org">sgc@nmlindia.org</a> , Mobile No 9835550277	The aim of the proposed project is to develop fine pearlitic steel wires with high tensile strength after hot rolling and controlled cooling by optimizing the compositional, processing and microstructural parameters. To design a novel alloy composition by certain specific additions to the conventional alloy chemistry that would raise the inherent potential of the steel to achieve fine pearlitic structure by increasing the driving force. The target property for the novel nano-pearlitic steel would be : UTS in the range of 1300 – 1500MPa in the as hot rolled condition without any additional patenting treatment and 2200 – 2600 MPa after wire drawing	Rs. 130.0222 lakh  3 years	Ministry of steel and CSIR Not recommended
38.	Gasification-based Environment Friendly and Energy Efficient Water Heating System	Indian Institute of Technology Patna, Patna, Bihar 801103	Dr. Rishi Raj, Assistant Professor Ph: +91-612-302-8166 (office), +91-829-233-9322	Oil sands mining and extraction processes require commercial scale (1000 – 10,000 m <sup>3</sup> /h) hot water in the 30-90 °C range. Currently this hot water is produced indirectly through contact with steam produced in natural gas fired boilers, and cogeneration units, as well as waste heat with a large greenhouse gas (GHG) emission footprint.	Rs. 45.2784 lakh  3 years	Not thrust Area of S&T Not recommended



			E-mail: rraj@iitp.ac.in	Our objective is to propose a biomass gasification based heating system that can generate hot water with reduced GHG emissions, and can replace or supplement conventional hot water production approaches in mining operations. The primary objectives include: (a) GHG emission reduction, (b) Optimizing cost of technology at specific scales of hot water production, and (c) Technology and business readiness of the outcome.		
39.	Biosensors Application for Mine Safety	B. V. Raju Institute of Technology, Narsapur, Medak (Dist.), Telangana State.	Dr. Ashok Kumar Nanda, Associate Professor, Email: ashokkumarna@yahoocom	To develop a sophisticated System using Customized sensors and development boards to sense lives for immediate rescue operation in disasters of mining. The design is aimed to be portable, compact, reliable, wireless and accurate system for rugged environments.	Rs.32.1854 lakh 3 years	Pertains to Ministry of health & DGMS Not recommended
40.	Numerical modelling of underground mine excavation	Sardar Vallabhbhai National Institute of Technology, Surat	Dr. Shailendra Kumar Assistant Professor, Ph.No: (O) +91-261-2201804 (M) +91-9904402960  Email: <a href="mailto:skumar@amd.svnit.ac.in">skumar@amd.svnit.ac.in</a> <a href="mailto:skumar1863@gmail.com">skumar1863@gmail.com</a>	<ul style="list-style-type: none"> <li>To obtain appropriate material properties of rock to use in numerical modelling based on laboratory test data, to make the numerical models more reliable.</li> <li>To undertake parametric studies of different rock materials properties to determine their potential effects on the stability of model in underground excavation.</li> <li>Determination of mining-induced stress regimes in underground mine excavation</li> <li>Prediction of the mining-induced surface subsidence and ground movements caused during excavation</li> <li>To simulate the caving process rock mass using strain softening behaviour of the rock</li> <li>Verify and validate the developed numerical model using measured field data and observations</li> </ul>	Rs. 49.9855 lakh 3 years	Theoretical in nature Novelty missing Repetitive work
41.	Beneficiation and Recovery of Rare Earth Minerals from Beach	National Institute of Technology, Rourkela - 769 008	Dr. Hrushikesh Naik, Associate Professor,	1. Detail study of the rare earth minerals available in Indian coastal regions 2. (a) Development of Fluidization system along with other ore concentration operations based on the physical and	Rs. 60.144 lakh 3 years	Pertains to DAE & IREL Not recommended

	sands using Fluidization and Flotation Techniques		Telephone [0661-2462603 (O), 0661-2463603 (R) & 9937115419 (M)], Fax: 0661-2462999 Email: hknaik@nitrrkl.ac.in	chemical characteristics of the ores. (b) To impart magnetic field and provide external heating around the fluidized bed if required depending upon the properties of the rare earth elements (c) To make arrangement for secondary air flow to the fluidized bed if required. 3. Determination and documentation of the rare earths and heavy minerals present in beach sand deposits 4. To carry out fluidization experiments for the efficient recovery of rare earth elements 5. To concentrate various minerals present in ores by determining the optimum segregation index for near gravity minerals, 6. To study the influence of physical and chemical characteristics of mineral samples in beneficiation and for the maximum recovery of useful heavy minerals. 7. Determination of the applicability of the rare earth minerals with upgraded concentration in industries 8. Development of cost-benefit analysis using the fluidization technique as an alternative to the present studies of wet beneficiation of heavy minerals. 9. To carry out CFD analysis for mineral beneficiation.		
42.	Model Test and Field Study of Unpaved (Rural) Roads Using Coal Mine Wastes Reinforced with Natural Geosynthetics.	IIT(ISM), Dhanbad	Dr. Sowmiya Chawla Assistant Professor Mobile No : +91-9990907710; +91-7070654099 Email ID : <a href="mailto:sowmiya@iitism.ac.in">sowmiya@iitism.ac.in</a> ; <a href="mailto:sowmiya_iitd@hotmail.com">sowmiya_iitd@hotmail.com</a>	<ul style="list-style-type: none"> <li>To investigate the problems associated with existing low volume roads.</li> <li>Investigation of material properties for subgrade, sub base, base, surface and natural Geosynthetics in pavement.</li> <li>To carry out model test in laboratory to check the performance of pavement.</li> <li>Perform a numerical simulation of the test problem and validate it with that of model test results.</li> <li>Perform Field study and compare with it model test.</li> <li>Suggest an appropriate remedial design method for various kinds of subgrades in the existing low volume roads.</li> </ul>	Rs. 115.032 lakh 3 years	Repetitive work Not recommended

43.	DEVELOPMENT OF CONSTRUCTION MATERIALS USING STABILISED ZINC/LEAD MINE TAILING	Indian Institute of Technology RoparNangalRoad, Rupnagar - 140001 Punjab, India  IISc Bangalore	Naveen James Assistant Professor Telephones (Mobile; Landline) : +919482519897, +91-1881-242177 E-mail : naveen.james@iitrpr.ac.in	Physical, chemical and geotechnical Zn/Pb mine tailing 2. Stabilisation and solidification of Zn/Pb mine tailings for developing bricks and coarse aggregates using various combinations of bagasse ash, rice husk ash and fly-ash. 3. Mechanical characterisation (strength and durability) of aggregates and bricks which are derived from the agglomeration of mine tailings 4. Experimental assessment of volume change, shear strength behaviour modulus of stabilised Zn/Pb mine tailing and mixture of soil and mine tailing at different proportions. 5. Laboratory assessment of dynamic properties of Zn/Pb mine tailings and mixture of soil and mine tailing	Rs. 62.24245 lakh  3 years	<b>Lacks Novelty</b>  Not recommended
44.	PROPAGATION AND ATTENUATION OF SHEAR WAVES INDUCING HIGH STRAINS IN JOINTED ROCKS	Indian Institute of Technology RoparNangal Road, Rupnagar– 140001	RESMI SEBASTIAN Assistant Professor Mb.- 919986992070 <a href="mailto:resmi@iitrpr.ac.in">resmi@iitrpr.ac.in</a>	1. Setting up of an experimental facility to study shear wave propagation in rocks inducing high strains and characterization of materials. 2. Study and analysis of shear wave propagation in rocks with frictional and filled joints. 3. To obtain the transmission, reflection and absorption coefficients of shear waves propagating through rocks with different joint orientations and roughness coefficients. 4. To study the damping behaviour of shear waves across joints with various infill materials and identification of suitable filler material that can be used in field problems to reduce the transmission of waves to structures constructed in rocks. 5. To conduct an in-depth study on the wave propagation mechanism across discontinuities using numerical simulations.	Rs.49.5902 lakh  3 years	Theoretical in nature with remote practical application Not recommended
45.	GEOTECTONIC EVOLUTION OF THE MAFIC/ULTRAMAFIC BODIES IN LADAKH VALLEY AND ASSESSEMNT	Indian Institute of Technology (Indian School of Mines) Dhanbad-826 004	Dr. Pranab Das, Assistant Professor, Ph. No. 0326-223-5894 Mob No: 0947119189e-	The process of formation of mineral deposits vis-à-vis their genetic constraints is interesting both in terms of basic approaches for understanding the origin and evolution of minerals and their ultimate applications in concept based exploration in all To achieve the objectives, the methodology for the work plan for the proposed research project will consist of five basic work components:	Rs. 217.40784 lakh  3 years	Theoretical in nature with remote practical utility Not recommended

	FOR PRECIOUS METAL MINERALIZATION		mail: <a href="mailto:pranab@iitism.ac.in">pranab@iitism.ac.in</a>	<ol style="list-style-type: none"> <li>1. Detailed Field Work and Sample Collection</li> <li>2. Detailed Petrographic Study and mineral chemistry</li> <li>3. Geochemical Analysis of selected samples</li> <li>4. Data Interpretation</li> </ol>		
46.	Novel Approach to Recover Individual Valuable Heavy Minerals from Pyriboleferrous Beach and Dune Sand Deposits	CSIR-Institute of Minerals & Materials Technology Bhubaneswar-751013	Dr. C. Eswaraiah Ph. No. 0674-2379505 Email- <a href="mailto:eswar@immt.res.in">eswar@immt.res.in</a>	<ul style="list-style-type: none"> <li>✓ To pre concentrate the heavy minerals by dry process using advanced air cyclones, where most of quartz and pyribole minerals can be rejected</li> <li>✓ To pre concentrate the heavy minerals at shore by using sea water</li> <li>✓ To recover individual heavy minerals by total wet process except for the recovery of rutile which is less than 2%</li> <li>✓ Efficient unit operations by suitable modeling and simulation techniques for separation of beach sand minerals having closed range physical properties</li> <li>✓ Development of process flow sheet with material balance for commercialization.</li> </ul>	Rs. 49.495 lakh  3 years	Recommended
47.	Liquefaction analysis of backfill mines for rehabilitation	Sardar Vallabhbhai National Institute of Technology, Surat	Dr. Shrutishukla Assistant professor Ph. No: 0261-2201812, 97129-00868 Email: <a href="mailto:sdv@amd.svnit.ac.in">sdv@amd.svnit.ac.in</a> , <a href="mailto:shrutishukla171180@gmail.com">shrutishukla171180@gmail.com</a>	<ul style="list-style-type: none"> <li>• To make the abandoned site of mine free from producing any hazardous waste, any poisonous gases and any kind substances which found to be dangerous for living human being.</li> <li>• To make the abandoned mine site easily approachable and also to make it fruitful for vegetation growth or agricultural outcomes.</li> <li>• To make the surrounding environment free from toxic additives if any present due to mining.</li> <li>• To make the abandoned mine site well suited for rehabilitated land for purpose of producing mass housing and mass infrastructure for living bodies. After performing a geotechnical investigation, it is easy to find suitable type soil for backfilling of mines.</li> <li>• To Carry out liquefaction analysis and to get the values of Cyclic Resistance Ratio (CRR), Cyclic strain ratio (CSR), (N1)60 etc. to determine the</li> </ul>	Rs. 48.74775 lakh  3 years	Resubmit to PERC with industry partner Mines to be specified Recommended

				probability of liquefaction. These parameters are derived from cyclic tri axial test and other types of laboratory and field tests.		
48.	Molten salt electrolysis for affordable production of the reactive metal(e.g. Ti and Zr)	Indian Institute of Technology, BHU Varanasi	Dr.Randhir Singh Assistant Professor Email: <a href="mailto:randhir@iitbbs.ac.in">randhir@iitbbs.ac.in</a> Tel:+91-8093919229	One of the objectives in this project is <u>to perform modelling studies of the reactor and process involving similarity principle to overcome the obstacles in further scaling up at DMRL. The second and final objective</u> is to erect a custom built molten salt electrolysis cell at IIT-BHU to carry out TiO <sub>2</sub> /ZrO <sub>2</sub> reduction to Ti/Zr via: i. the FFC Cambridge process ii. electrolytic reduction processes related to the <u>MER composite anode process</u> to be performed in the same reactor as the FFC Cambridge process It goes without saying that apart from pure metal production, novel alloy composition, alloys which are difficult to process via melt route, will be developed	Rs. 22.84 lakh  3 years	Pertains to ongoing project of DMRL Not recommended
49.	Investigation of the dynamics & mechanism of flocculation by polymers and biopolymers for separation of solid particles of high rate thickeners in mineral processing industries.	CSIR-National Institute for Interdisciplinary Science and Technology (NIIST) Industrial Estate P.O, Thiruvananthapuram - 695 019.	Dr. LAKSHMI RAKESH KUMAR YASARLA Telephone No: +91471-2515278 (O), Mob: +91 9032 450 550 Email: <a href="mailto:yasarla.rakesh@gmail.com">yasarla.rakesh@gmail.com</a> , <a href="mailto:rakeshyasarla@niist.res.in">rakeshyasarla@niist.res.in</a>	1. Estimation of total solids in the input stream. 2. Estimation of dry mass of the total solids. 3. Particle size and zeta potential analysis of particles in the feed. 4. Sedimentation and clarification studies of the particles at different concentrations. – To understand the settling velocity with gravity. 5. Selection of the polymers (Flocculants) based on the physical characteristics of the particles. 6. Optimization of the flocculation studies. 7. Optimization of the Flocculation studies and estimation of the settling velocities. 8. Optimization of the shear force effects on the flocculated particles. 9. Estimation of the settling velocities of the flocculated particles and sedimentation process. 10. Optimization process of both flocculation. Techno economic analysis of the flocculation process	Rs.77.5543 lakh  3 years	Resubmit to PERC with industry partner Recommended
50.	Design and	CSIR- Institute	Dr. Asheesh	Over proposed project has two folds objectives (i)	Rs.	Repetitive in nature

	Development of innovative constructed wetlands suitable for Cr (VI) containing chromite mines wastewater treatment	of Minerals and Materials Technology Bhubaneswar	Kumar Yadav, Senior Scientist	<p>development of innovative compact and fast constructed wetlands using optimisation of various interdisciplinary processes (ii) Performance assessment of developed constructed wetlands for Cr (VI) containing chromite mines wastewater treatment. Cr (VI) removal will be main focus but it will also assess the removal of other heavy metals present in chromite mines wastewater.</p> <p>Objective 1.Screening of suitable plants species that can grow and accumulate Cr (VI) and other selected heavy metals in local climatic condition</p> <p>Objective 2.Development of mixed microbial consortium for selected Cr (VI) and other heavy metal removal.</p> <p>Objective 3.Optimisation of various processes for enhancing the Cr (VI) and other metal removal from selected mine wastewater like low cost slow release carbon source, solar power assisted and iron scarp corrosion etc assisted electron donor generation, selective high capacity adsorbents as CWs filter media, electron conductive filter media for oxidation reduction enhancement , different filling strategies of substrate and flow pattern of wastewater.</p> <p>Objective 4. Integration of all the optimised conditions to developed an innovative compact and fast constructed wetlands.</p> <p>Objective 5.Performance assessment of developed constructed wetlands for Cr (VI) containing chromite mines wastewater treatment. The Cr (VI) removal will be main focus but it will also assess the removal of other heavy metals present in chromite mines wastewater.</p>	75.6522 Lakhs  3 years	Not recommended
51.	DEVELOPMENT OF PERVIOUS GEOPOLYMERIC CONCRETE USING MINE WASTE ROCK FRAGMENTS	St.Mother Theresa Engineering College Vagaikulam, Thoothukudi – 628102	P.Maria Antony SebatinVimalan Assistant Professor Phone Off:	<ul style="list-style-type: none"> <li>To evaluate the viability of using copper tailings and waste rock in Geopolymeric Concrete.</li> <li>Physical, mechanical properties and Mineralogical characterization of Pervious Geopolymeric Concrete for large scale construction material.</li> <li>To analyze the performance and evaluate</li> </ul>	Rs.62.64Lakhs  3 years	Resubmit to PERC with industry partner Recommended

	AND COPPER TAILINGS		0461-2269301, Res: 8610363161 Email : vimalan14@gmail.com	the strength of mine waste rock and copper tailings in Pervious Geopolymeric concrete <ul style="list-style-type: none"> <li>To understand the mechanism of geopolymerisation of mine tailings.</li> </ul>		
52.	Utilization of Red Mud for Marine Concrete Based Applications: Climate Change Studies	Centre for Ocean Research, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai – 600 119	Dr.V.Ganesh Kumar Scientist – E Email: <a href="mailto:ganeshkumar@sathyabamauniversity.ac.in">ganeshkumar@sathyabamauniversity.ac.in</a> Mobile: +91 98414 72463; Ph: 044-2450 3308	1) Development of concrete blocks as per IS 15658: 2006 via geopolymer route for effective utilization of red mud and fly ash <ol style="list-style-type: none"> <li>High alkalinity of red mud(12.3) will be helpful in preventing ocean acidification.</li> <li>Geopolymer expected in the reaction is a ferrosialate. All standard concrete test will be carried out to evaluate the procedure.</li> </ol> 2) To study the impact of concrete blocks of size 150x150x150 mm <sup>3</sup> in marine environment under laboratory conditions using marine species. <ol style="list-style-type: none"> <li>Red mud based concrete blocks though will be stable their toxicity impact based will be helpful to ensure these blocks in marine environment.</li> <li>Long exposure &amp; TCLP studies will be carried out to study leaching metals.</li> </ol> 3) Development of Tetrapods and FAD structures for application in coastal areas. <ol style="list-style-type: none"> <li>Based on the optimization of the concrete tetrapods , FAD( fish aggregating device and artificial coral reefs will be prepared.</li> </ol>	Rs. 33.168 lakh 3 years	Repetitive work Not recommended
53.	Development of super light weight high strength Mg Metal matrix composites (MMCs) by powder metallurgy process for high temperature	St.Mother Theresa Engineering College Mudivaitanendal Post, Vagaikulam Tuticorin-628 102	Dr.P.Ravindran Associate Professor Phone Off : +91-99429 78599, Res:98421607 09 Email- :	<ul style="list-style-type: none"> <li>Fabrication of AZ31, AZ31-SiC, AZ31-Gr and AZ31-SiC-Gr composites manufactured by powder metallurgy technique using micro and nano level powders.</li> <li>To reveal the effect of hybridization on the composites.</li> <li>To understand the wear mechanisms, analysis of both worn surfaces and wears debris by SEM morphology.</li> <li>To reveal the both worn surface and</li> </ul>	Rs. 53.1 Lakhs 3 years	Resubmit to PERC with industry partner Recommended

	application in automotive and aerospace industries		energyravindran@gmail.com	<p>wear debris with the different wear mechanism and elements. To investigate the effect of various process parameter on wear loss and coefficient of friction.</p> <ul style="list-style-type: none"> <li>Investigate the micro mechanisms of plastic deformation that occur during the high temperature sliding wear of magnesium alloy.</li> </ul>		
54.	Use of Overburden Clay as alternate for aggregate	<p>Institute of Technology Madras Chennai-600 036, India</p> <p>NLC Ltd.</p>	<p>Dr.K.Ramamurthy</p> <p>Cell No. 9445391265 vivek@iitm.ac.in</p>	<p>i) Sampling of mines overburden clay at strategic locations and characterization of these clay materials.</p> <p>ii) Laboratory/Pilot level separation study with different clay and characterization of extracted sand, clay/silt and wash water used for wet sieving.</p> <p>iii) Detailed investigations on use of processed clay from different sources of overburden in concrete and mortar for fresh and hardened properties including shrinkage studies and comparing with concrete/mortar with coarse aggregates.</p> <p>iv) Study on alternative technologies for converting clay/silt rejects from the processed clay into value-added large-volume consumption products like bricks, aggregate and pozzolanic material. Conversion of the clay reject into value-added product requires systematic study for arriving at suitable admixtures and processing methods.</p> <p>v) The wet-sieving-based processing of mines clay will result in wash water rejects. Hence characterization of wash-water from different types of soil processing needs to be characterized and suitable local treatment to be evolved for reuse of this treated water back into the system. Such detailed study will help to develop treatment plant with capacity required for the pilot-scale plant.</p>	Rs. 178 Lakhs 3 years	Recommended



55.	Geochemical Signatures of Scheelite and Potential for Exploration, Feasibility studies and process development of Tungsten concentrate and Light Rare Earth Elements (LREE's) as by-products from waste (tailings) dumps of Hutti Gold Mines Co Ltd (HGML).	CSIR-National Geophysical Research Institute, Uppal, Hyd	Dr P.V. Sunder Raju., Principal Scientist, Email: <a href="mailto:perumala.raju@gmail.com">perumala.raju@gmail.com</a> ; 09490748152 ; (O)040-27012446	<ol style="list-style-type: none"> <li>1. Characterization of ore body with scheelite and gold</li> <li>2. Ore petrography wherever possible, gold and Multimetal mineralization</li> <li>3. Application of the new generation portable XRF and SWIR to characterize the mineralogy and alteration halos</li> <li>4. Application of insitu- LA-ICPMS for trace element composition</li> <li>5. Laboratory test works to evaluate processing options. <ol style="list-style-type: none"> <li>a. Mineralogical characterization of different ores by X-ray Diffraction analysis (XRD)</li> <li>b. Then decide the composition of tungsten for the metallurgical tests with the associated gangue separation etc.,</li> </ol> </li> <li>6. Process development at NFTDC or IMMT for extraction of tungsten concentrates and LREEs as by product</li> </ol>	Rs. 114.04 lakh 3 years	Recommended
56.	LOCALIZING UNUSUAL EVENT AND ALERT SYSTEM FOR MINING	National Institute of Technology, Rourkela-769008	Dr. Santos Kumar Das (Principle Investigator) Assistant Professor, Email id: <a href="mailto:das.santoskumar@gmail.com">das.santoskumar@gmail.com</a> , Mobile: +91-9437940105, Office: +91-661-2462466	<ul style="list-style-type: none"> <li>• Open cast fall detection location finding during dumping.</li> <li>• Water leakage and location finding for underground and open cast mining.</li> <li>• Work depth measurement and location finding of open cast and underground mining.</li> <li>• Accident detection &amp; location finding for open cast and underground mining</li> <li>• Alerting Emergency services (Hospital, Fire, Police station, Headquarters etc.).</li> <li>• Worker Density measurement (worker crowd) for open cast and underground mining</li> <li>• Water quality and pollution measurement at various places of open cast and underground mining</li> <li>• Automation system development of open cast and underground mining for various applications</li> <li>• Intrusion and crime detection</li> </ul>	Rs. 105.06 lakh 3 years	Pertains to DGMS Not recommended

				<ul style="list-style-type: none"> <li>Human and asset tracking of open cast and underground mining</li> </ul> Mobile and web app development for various applications		
57.	Genesis and exploration studies of Platinum Group Elements (PGE) from the Mafic-Ultramafic Complexes of Southern Granulite Terrain, India	CSIR-National Geophysical Research Institute, Uppal Road, Hyderabad,	Dr. T. Yellappa Senior Scientist, Tele: office: +91-40-27012605; Mob: 91-9441885071; Email: <a href="mailto:yellappa1978@gmail.com">yellappa1978@gmail.com</a> ; <a href="mailto:yellappa_thoti@yahoo.co.uk">yellappa_thoti@yahoo.co.uk</a>	<ul style="list-style-type: none"> <li>To understand geology and tectonics of mafic-ultramafic magmatism and associated lithologies with in the Cauvery Suture Zone, Southern Granulite Terrane, India.</li> <li>To identify their age of emplacement and magmatic genesis by integrating geological mapping with whole-rock geochemistry, mineral chemistry and geochronology.</li> <li>To understand the internal architecture of selected mafic and ultramafic complexes and its relationship with the occurrence of Platinum Group of Elements (PGE).</li> </ul>	Rs. 69.3 Lakhs 3 years	Theoretical in nature Extensive work has been done by GSI Not Recommended
58.	Development of roasting-leaching route to produce iron ore concentrate at par with the composition of high/medium grade iron ore from finer size iron ores/ slimes/lower grade iron ores suitable for steel making	The M. S. University of Baroda, Vadodara	Dr. ASHOK KUMAR VAISH Ministry of Steel, Steel Chair Professor Ph.No.(0265) 2434417, Email: head.metnmat s@gmail.com	The objective of this investigation is to reduce utmost alumina and silica content in finer size iron ores/ slime/ lower grade iron ores in order to produce iron ore concentrate at par with the composition of high grade iron ore/ medium grade iron ore, which is not possible by conventional separation techniques like physical separation, magnetic separation, gravity separation etc.	Rs. 283.875 lakhs  3 years	Pertains to Ministry of Steel Not recommended
59.	Purifying stored water (capacity 80,000 liter/day) in abandoned coal mines satisfying IS	Environmental Engineering Group CSIR-CMERI, Durgapur – 713209	Dr. S.R. Debbarma, Principal Scientist Contact Details :	The main objective of the project is to develop a water purification system for utilization of stored water in open crust coal mines for use by nearby locality and to address the water scarcity problem. <ul style="list-style-type: none"> <li>Utilization of un-used coal mine water by establishing necessary purification process based</li> </ul>	Rs. 58.384 Lakhs 3 years	Pertains to Ministry of Coal Not S&T thrust area Not recommended

	10500: 2012 to cater the portable water scarcity in the adjacent locality of mines.		9434029494; srd@cmeri.res .in	on the water test reports. ✓ Providing portable water to local population. ✓ Design, development, manufacturing and installation of 80,000 liter/day) capacity water purification plant at Top-line OCP site of Eastern Coalfield Ltd. Under Andar P.S, West Bengal		
60.	Research studies on feasibility of setting up an Electronic grade silicon production in lab scale unit from Silica mined in NLC India mines and solar cell fabrication and characterization	Annamalai University, Annamalainagar – 608 002.	Dr. R.Joseph Daniel., M.E.,Ph.D(IIT M)., Associate Professor Annamalai University, Annamalainagar – 608 002.	<ul style="list-style-type: none"> <li>Conducting extensive studies to establish the suitability of silica mined at NLCIL and preparing the technical report and the proposal for setting up a EG silicon wafer manufacturing plant at NLCIL.</li> <li>Establishing the necessary facilities to fabricate in-house solar cell modules from silicon wafers as starting material and conducting research studies to standardizing the process flow for fabricating international standard silicon PV cell modules.</li> </ul>	Rs. 94.58 Lakhs 1 year	Recommended
61.	Studies on optimization of parameters to control friction induced incendive spark in light metal alloys	CSIR - Central Electrochemical Research Institute, Corrosion and Materials Protection Division (CMPD), Karaikudi - 630 003	Dr. R. Mayandi Phone: (+91) 4565 241151, 83006 80346 Fax: (+91) 4565 227713, 227779 1 Email: ttbd@cecri.res .in	Key objectives of this projects are to: (a) Determine the conditions under which incendive sparks are produced during frictional impacts between light metal alloys and rusted steels in mines. (b) Investigate the chemical composition and physico-chemical and electro-mechanical properties of light alloys and steels used in mines. (c) Investigate the drawbacks of the current protective coatings used in mines to reduce incendive sparking. (d) Identify and recommend appropriate set of optimized parameters for controlling incendive sparking. (e) Based on the project findings, propose a novel coating system that can control incendive sparking in light metal alloys.	Rs. 44.56256 Lakhs  3 years	Pertains to DGMS Not recommended
62.	Development of graphene based membranes from graphite ore for desalination	CSIR-National Institute for Interdisciplinary Science and Technology Industrial Estate P.O, Thiruvananthap	Dr. (Mrs). SreejaKumari. S.S (PI) Scientist,  Telephone No: +91471-2515371 (O),	<ul style="list-style-type: none"> <li>Develop a non-hazardous and non-petroleum based environmentally friendly flotation reagents for beneficiation of low grade graphite ore.</li> <li>Synthesis of graphene from graphite ore in large quantity (200g/Batch) by indigenous dual drive planetary ball milling and development of graphene based composites.</li> <li>Optimization of the synthesis technique and</li> </ul>	Rs. 73.2486 Lakhs 3 years	Recommended

		uram - 695 019. NML Jamshedpur	Mob: +91 9442217259 E-mail: <a href="mailto:sreejakumari@niist.res.in">sreejakumari@niist.res.in</a> , <a href="mailto:sreejakumaris@gmail.com">sreejakumaris@gmail.com</a>	precursor materials. The milling critical speed, reaction time and precursor materials will be tune in order to achieve high quality graphene. <ul style="list-style-type: none"> <li>• Fabrication of graphene/Graphene Oxide and Functionalized Graphene Oxide membranes.</li> <li>• Studying the desalination performance of the fabricated membranes and comparing with the conventionally used membrane for desalination.</li> </ul>		
63.	DEVELOPMENT OF REAL TIME MODELLING OF DUST CONCENTRATION IN OPENCAST LIGNITE MINE AT NEYVELI IN TAMILNADU	Centre for Atmospheric Research & Climate Change (CARE2C) Annamalai University	Dr. S.Mohan, Associate Professor E-mail : <a href="mailto:drsmafeat@gmail.com">drsmafeat@gmail.com</a>  Phone:+91 4144 239731 [0]  +91 4144 220126 [R]  Mobile: +91 944 32 40929	<ul style="list-style-type: none"> <li>• To modify the DST assisted Multi Plume source Complex (MPC) model for simulating real time modeling of dust concentration in opencast lignite Mine-II at Neyveli</li> <li>• To monitor the real time in-situ concentration of dust using DustTrackII</li> <li>• To carryout continuous meteorological monitoring at the Mine-II site.</li> <li>• To validate the MPC model by comparing the modeled concentration of Dust by the MPC model with the concentration of dust monitoring by the DustTrackII</li> <li>• To simulate real time dispersion pattern of Dust in the Mine-II greatly helpful at the time of extreme Dust episodes for managing the emergency by dust suppression mechanisms</li> </ul>	Rs. 38.62 Lakhs 2 years	Pertains to DGMS Not recommended
64.	"Recovery of scandium metal from acid leach liquor from titanium mineral industries"	CSIR-National Institute for Interdisciplinary Science and Technology ( NIIST) Industrial Estate P.O, Thiruvananthapuram - 695	Dr. M. SUNDARARA JAN Senior Scientist Telephone No:+91471-2515250( O), Mob: +91 8129075511 E-mail: <a href="mailto:rajanmsundar77@yahoo.co">rajanmsundar77@yahoo.co</a>	<ul style="list-style-type: none"> <li>• Physical and chemical characterisation of titanium leach liquor byproducts from select titanium mineral industries Pre treatment of the leach liquor for suitable acid concentration , pH and oxidation reduction states of select elements.</li> <li>• Solvent extraction separation of scandium values from the leach solution.</li> <li>• Preparation of high purity scandium oxide and its hydro-fluorination to scandium fluoride.</li> <li>• Calciothermic reduction of scandium fluoride to scandium metal.</li> </ul>	Rs. 63.3293 Lakhs 3 years	Recommended

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65.	Fly Ash: A Multi-Functional Material of Future Era	Indian Institute of Engineering Science and Technology Shibpur, Howrah, 711103	Prof. N. R. Bandyopadhyay(Head)  Contact Details : <a href="mailto:nrb@matsc.iitests.ac.in">nrb@matsc.iitests.ac.in</a> / <a href="mailto:nrb.besus@gmail.com">nrb.besus@gmail.com</a> +91 33 2668 8140 (O), +91 98300 46541 (M)	1. Procurement of normal available fly ash (grey) 2. Optimization of the conductivity of grey fly ash based composite for obtaining required conductivity. 2. Turning the as obtained grey fly ash to near whitened fly ash by technique developed by Sri Bandyopadhyay of UNSW Australia, e.g. pages 8 – 11, CIPET TIMES May – Sept 2010 3. Developing different white fly ash based composites with carbon nanostructures, polymer, cement and materials. 4. Dispersing the as synthesized material into commercially available OPC and geopolymers with and without external functionalization. 5. Basic characterization like XRD, FESEM, TEM, FTIR, Raman, BET for having ideas about structural, morphological, or compactness of the blank and composite materials. 6. Study of different mechanical, thermal, and piezoelectrical properties of blank and composite materials. 7. Study of dielectric and shielding property. 8. Optimization of filler loading for obtaining the best performance of the composites. 9. Commercialization of as developed products.	Rs. 102.52 lakh 3 years	Not S&T thrust area Not Recommended
66.	Electronic and thermoelectric properties of some minerals	M.L. Sukhadia University Udaipur-313001 (India)	Prof. K.B. Joshi Email: <a href="mailto:cmsmlsu@gmail.com">cmsmlsu@gmail.com</a> , <a href="mailto:k_joshi@yahoo.com">k_joshi@yahoo.com</a> Mobile No. : 9414263540	<ul style="list-style-type: none"> <li>To model and predict lattice parameters of a few minerals amongst Briarite, Calverite, Catamarcaite, Bambollaite, Umangite, Dimporphite, Duranusite and the derivatives.</li> <li>To determine if these minerals are conductors, semiconductor or insulators by means of the bands structure and the electronic density of states.</li> <li>To predict the thermoelectric properties and examine the possibility of its usage in TEs.</li> <li>To calculate zone centre vibrational properties</li> </ul>	Rs. 25.6405 lakh 3 years	Theoretical in nature Not recommended
67.	SUPERCAPACIT	Francis Xavier	Dr.A.GNANAS	1. To develop an intelligent system, that	Rs.36.0387	Not S&T thrust area

	OR BASED EFFICIENT ENERGY STORAGE SYSTEM WITH ENERGY BALANCING CIRCUIT FOR OFF-GRID MINES USING AI TECHNIQUES	Engineering College, Tirunelveli-6270023	ARAVANAN Professor and Head Mobile-9942778202 Email ID- gnanasarav@rediffmail.com, vpscad@gmail.com	monitors the energy criteria's in off grid mines at different operating conditions and supply the quality power to all categories of mining equipments by balancing circuit. 2. To identify the exact need of balancing circuits in different Power scenarios and weather conditions of off grid Mines. 3. To design and select the suitable balancing network and charging circuit for mining equipment after reviewing the distribution intervals containing concentrated mining power points using Gaussian distribution information.	lakh 3 years	Not recommended
68.	Facile synthesis of Rare earth metal oxide nanoparticles like CeO <sub>2</sub> and Zn-doped CeO <sub>2</sub> : Study of their adsorption and photo catalytic activities for removal of toxic organic dyes from waste water	School of Applied Sciences KIIT Deemed to be University Bhubaneswar-751024, Odisha, India	Dr. Tapas RanjanSahoo Mobile: +91-7978060701 mail: <a href="mailto:tapasji@gmail.com">tapasji@gmail.com</a> <a href="mailto:trsahoofch@kiiit.ac.in">trsahoofch@kiiit.ac.in</a>	<ul style="list-style-type: none"> <li>Synthesis of rare earth metal oxide, CeO<sub>2</sub> and Zn-doped CeO<sub>2</sub> nanoparticles by a non-conventional method i.e. microwave-assisted combustion synthesis and also by microwave mediated eco-friendly synthetic approach.</li> <li>Characterization of the synthesized nanoparticles is to be carried out by various analytical techniques. Phase and structure identification study by X-ray diffraction (XRD) and Surface morphology and particle size are to be investigated using electron microscopy techniques.</li> <li>Adsorption and Photo catalytic degradation study of common water pollutant organic dyes like; Congo Red, Eriochrome Black-T, Xylenol Orange, Malachite Green with crystalline CeO<sub>2</sub> and Zn-doped CeO<sub>2</sub>nanomaterials.</li> <li>A comparative and process optimization study is to be done to assess the performance of catalyst, based on efficiency and in context of maximum dye(s) degradation property.</li> <li>An investigation on kinetics, thermodynamics and isotherm studies from the adsorption activities of the rare earth metal oxides (CeO<sub>2</sub> and Zn-doped CeO<sub>2</sub>).</li> </ul>	Rs. 18.509 lakh 3 years	Theoretical in nature Not recommended
69.	Low Grade Iron Ore as Mineral	Amity School of Engineering and	Dr. R.K. Tomar, HOD,	1. To study the effect of lower grade iron ores on mechanical properties of concrete	Rs. 39.346 lakh	Repetitive work Not recommended

	Admixtures for Improving Mechanical Performance of Concrete	Technology Amity University, Sector-125, Noida, U.P., India – 201301	Email: <a href="mailto:rktomar@amity.edu">rktomar@amity.edu</a> ; Contact: +91 120 439 2537 (O), +91 9810505093 (M)	2. To establish the optimal content of various types of lower grade iron ores to be used as mineral admixture in concrete. 3. To develop a novel and comprehensive strategy for use of the lower grade ores as mineral admixture, and moreover, also as partial replacement of fine aggregates/sand in concrete. 4. To assess the economic feasibility of using lower grade iron ores in concrete, either as mineral admixture or as partial replacement of fine aggregates or as a combination thereof.	3 Years	
70.	Synergistic Treatment of Wastewater Using Nanomaterials and Algal Technology and its Feasibility Studies: Focus towards Mining Industry	Discipline of Biosciences & Biomedical Engg., IIT Indore	KiranBala (Dr., Mrs.) Assistant Professor  Tel: +91-7324306585 E-mail: <a href="mailto:kiranb@iiti.ac.in">kiranb@iiti.ac.in</a>	1. Screening and selection of algal species from mine environment 2. Investigation of algal response in simulated/actual mine wastewater 3. Optimization of process parameters to improve the treatment/metal accumulation efficiency 4. Synthesis of different kinds of nanoparticles which could enhance the binding contaminants 5. Characterization and Functionality testing 6. Evaluation of nanoparticulate systems to aid algal system to remove the contaminants in wastewater from mines.	Rs. 99.50 lakh  3 years	Resubmit to PERC with industrial partner Recommended
71.	Process Flowsheet Development for Recovery of Strategic Heavy Minerals from Red Sediments of Badlands Topography of SE Coast of Odisha and in-depth characterization of minerals for Industrial Applications	Mechanical Engineering Bidyanagar, Mahura, Janla, Bhubaneswar-752054 C. V. Raman College of Engineering	Dr. Sunita Routray Assistant Professor, Email. ID: <a href="mailto:sunitaroutray77@gmail.com">sunitaroutray77@gmail.com</a> , Mobile No.: 08895389315	<ul style="list-style-type: none"> <li>To identify the different Red Sediment deposits in the state of Odisha.</li> <li>To study the mineralogy and chemical composition of Red Sediment deposits</li> <li>To study the mineralogy and chemical composition of THMs recovered from Red Sediment.</li> <li>To recover individual heavy minerals from these resources with suitable flowsheet.</li> <li>In depth characterization of the strategic heavy minerals such as ilmenite and zircon.</li> <li>To assess the amount of rare earth minerals such as La, Ce, Pr etc present in rare earth bearing heavy minerals such as zircon.</li> <li>To assess suitable value addition of strategic heavy minerals.</li> </ul>	Rs. 48.527 lakh  3 years	Outcome not focused as per the S&T thrust area Not recommended

72.	Development of wear and corrosion resistant nanoparticles reinforced polymer coatings for mining equipments and structures to protect from low stretch scratching wear and erosion corrosion	CSIR-Central Electrochemical Research Institute, Karaikudi, Tamil Nadu  CIMFR	Dr. R. Vedalakshmi Principal Scientist, Mobile : 9442226539 E-mailID: corveda@yahoo.co.in	1. Identification of surface and sub-surface steel structures in underground coal mines and their grading with regard to chemical compositions 2. Assessment of environmental conditions like temperature, humidity, water quality and strata conditions in underground coal mines. 3. Assessment of corrosion ratings under different mining environments in laboratory and in-situ conditions 4. Protection of mining equipments and structures from low stretch scratching wear and erosion corrosion in acid mining environment. 5. Assessment of microbiologically induced corrosion (MIC) on steel structures in underground coal mines. 6. Validation/application of developed products in actual mining conditions.	Rs. 157.68758lakh  2 years	Generic in nature Not recommended
73.	Feasibility of Utilizing Iron Ore Tailings in the Construction of Road Infrastructure	Indian Institute of Technology (Indian School of Mines) Dhanbad, Dhanbad-826004,	Dr. RajibSarkar Assistant Professor, E-mail: <a href="mailto:rajib@iitism.ac.in">rajib@iitism.ac.in</a> Mobile: +91-9430351282 Office: +91-326-223-5878	<ol style="list-style-type: none"> <li>1. Chemical and microstructural characterization of iron ore aggregates and fine materials (collected from iron ore mines located in Jharkhand, Odisha and Chhattisgarh).</li> <li>2. Engineering characterization of iron ore aggregates and fine materials for possible use in road infrastructure (road materials and embankments) considering dry and saturation conditions.</li> <li>3. Feasibility study of iron ore aggregates and fine materials for road infrastructure (road materials and embankments).</li> <li>4. Scaled modeling of a typical highway embankment in a model tank with iron ore aggregate as base material and iron ore fines as sub-base material for monotonic and cyclic load testing for investigation on the performance of highway embankment. <ol style="list-style-type: none"> <li>a. Utilizing iron ore tailings fully</li> <li>b. Utilizing iron ore tailings partially</li> </ol> </li> <li>5. Performance comparison of highway embankment with iron ore tailings and highway embankment with conventional materials.</li> <li>6. Performance of highway embankments with iron ore tailings reinforced with geogrid and</li> </ol>	Rs. 71.60110lakh  3 years	Lacks novelty Not recommended



				<p>geotextiles for applications in heavily loaded pavements.</p> <ol style="list-style-type: none"> <li>a. Utilizing iron ore tailings fully</li> <li>b. Utilizing iron ore tailings partially</li> </ol> <p>7. Formulation of design guidelines for construction of road infrastructure with iron ore tailings.</p>		
74.	Integrated study for strategic exploration of rare earth minerals from Meghalaya region, India	Indian Institute of Technology (Indian School of Mines) Dhanbad Dhanbad-826004, Jharkhand, India	Dr. SaurabhDatta Gupta, Principle Investigator <a href="mailto:saurabh@iitism.ac.in">saurabh@iitism.ac.in</a> & +919825150688	Findings of host rock of REE mineral from Meghalaya, India sector is the primary objective of current study. The study area have been chosen based on geological setting which is encouraging for REE mineral exploration. After findings of host rocks of REE minerals such as Lanthanum (La), Praseodymium (Pr), Neodymium (Nd), Cerium (Ce) and Niobium (Nb) and detection of REE mineral's sample from host rocks is secondary objective of the study. The study will be conducted in Jasra and Sung Vally region of East Khasi hills. Apart from this two areas survey will be carried out few more areas have chosen for this study those areas are Barato, Lakadong, Mutong for findings REE minerals. Based on analytical result further extension study may be carried out in wide area of Meghalaya.	Rs. 98.75 Lakhs 3 years	Work in progress at IIT Roorkee under S&T scheme Not recommended
75.	DEVELOPMENT OF A NEW TYPE HIGH-EFFICIENT HYDROCYCLONE FOR INDIAN IRON ORE SLIMES BENEFICIATION	Indira Gandhi Institute of Technology (An Autonomous Institution of Govt. of Odisha)	Dr. Satyabrata Mohanta <a href="mailto:satyabrata.mohanta12@gmail.com">satyabrata.mohanta12@gmail.com</a> <a href="http://il.com">il.com</a> +91-9437211582 (phone) (06760) 240544 (fax)	The main objective of this study is to develop a new-type of hydrocyclone, through simple structural modification to the conventional hydrocyclone, that can generate strong centrifugal force inside the hydrocyclone and reduce the influence of short-circuiting flows. Moreover, the structure of the cyclone will remain simple so that it can be easily adopted by the industries.	Rs 22.9 lakh 3 years	Not the thrust area of S&T program Not recommended
76.	Design,	IIT(ISM)	Dr.Niranjan	(a) To develop an experimental set-up and	Rs.	Not the thrust area of

	Development and Analysis of an Energy Efficient Hydrostatic Split Power Transmission Drive used in HEMM	Dhanbad Dhanbad-826004, Jharkhand, India	Kumar (PI) Assistant Professor Ph. No. 0326 – 223-5884 (O), +91-9471191827 (M) Email : niranjan@iitis.m.ac.in	compare the fuel consumption between the proposed system and pre-existing split power hydrostatic transmission system for a given load profile. (b) To estimate the energy regeneration of the system in both driving and braking mode of operation. (c) To study the effect of load inertia on the dynamic responses of the system and its effect on the energy regeneration during braking. To develop the guidelines for the efficient operation of the transmission system for different duty cycles of the HEMM considered for application in different mining industries	49.3875 lakh  3 years	S&T program Not recommended
77.	Experimental Investigations on recycling of aluminum and development of Mg-Zn-Cu based Aluminum alloys for Automotive Applications	Hindusthan Institute of Technology, Coimbatore-641032. Tamilnadu, India	Dr.S.R.RAJA BALAYANAN B.E., M. Tech., Ph.D., Professor & Head. Mobile : 9443924797 E-mail : rajabalayanan@gmail.com	The objective of this research proposal is to obtain a high strengthened material with increased toughness and stiffness, but also a higher resistance to creep, corrosion, wears compared to conventional materials. In addition, further reinforcement of particulates to produce hybrid composites will enhance other specific properties such as low thermal expansion with high thermal stability and good electrical conductivity.	Rs. 26.05316 Lakhs 3 years	Theoretical in nature Not recommended
78.	Fast and Precise Quantitative Composition Mapping of Rare Earth Minerals using Field Hyper spectral Images along the coastal between Nagapattinam and Karaikal	Francis Xavier Engineering College, (Affiliated to AICTE & Anna University Chennai, Recognized under Section 2(f),12(B) of the UGC Act 1956 &	Dr. N. Muthukumaran, M.E., Ph.D Professor, Mobile Number : +91 9952203887. E-mail: kumaranece@gmail.com	✓ To explore untapped source of rare earth from minerals sand deposit using hyperspectral images of field spectra meter. ✓ To validate the finding of hyper spectral data by handheld X-ray fluorescence. ✓ To demarcate the distribution of potential deposits in a GIS platform	Rs. 90 Lakhs  3 years	GSI has already explored the area Not recommended

		Accredited by NBA), Tirunelveli - 627003, Tamilnadu, INDIA.				
79.	Light weight Al-Graphene composite using metal 3D printing	CSIR-Advanced Materials and Processes Research Institute, Hoshangabad road, Bhopal 462026	Dr. N. Sathish, Senior Scientist, Phone : +91 755 2457105 Extn 1136 Fax: +91 755 2457042 Mobile : +91 8940060551 Email : nsathish@am pri.res.in; sathishrn@gmail.com	<ul style="list-style-type: none"> <li>i. Synthesis/procurement of high quality grapheme &amp; reduced graphene oxide, characterization using Raman, XRD, FESEM and AFM techniques for standardising the quality and grade of Graphene.</li> <li>ii. Reinforcement of the graphene into AlSi10Mg alloy powder using wet and powder technique and characterization</li> <li>iii. 3D Printing of graphene-aluminiumnanocomposites using metal laser 3D printer and freeze the parameter and carry out characterization.</li> <li>iv. MD simulation of failure (creep) behaviour of AlSi10Mg alloys and compare it with metal 3D printed materials</li> <li>v. MD simulation of AlSi10Mg+Graphene composites mechanical properties and compare it with 3D materials properties</li> <li>vi. MD simulation of creep in the above system to understand the effect of Graphene on the failure mechanism of composites</li> </ul>	Rs. 49.728 lakh 3 years	Theoretical in nature Not recommended
80.	Texturally controlled micro-chronological and extraction protocol studies on Pt-Chromite mineralization	Centre for Earth Sciences Indian Institute of Science Bangalore 560 012, India  Indian Bureau of Mines	Prof. Sajeev Krishnan Associate Professor  Mobile: +91-9448427463 E-mail: sajeev@iisc.ac.in	<ul style="list-style-type: none"> <li>➤ To understand the mineral chemistry of chromite associated ultramafic rocks and their potentiality to PGE mineralisation.</li> <li>➤ To understand the textural and genesis of PGE in chromite and related ultramafic rocks.</li> <li>➤ To understand the PGE geochemical cycle in developing and locating new deposits.</li> <li>➤ To constrain the timing of PGE mineralisation in Chromites using <sup>190</sup>Pt/<sup>186</sup>O<sub>s</sub> geochronometer.</li> <li>➤ To adopt various beneficiation strategies to</li> </ul>	Rs.502.530 9 lakh 3 years	Recommended with rationalized budget

				<p>pre concentrate the PGE minerals.</p> <ul style="list-style-type: none"> <li>➤ To dissolve platinum from the pre concentrate using various lixivants.</li> <li>➤ To modify and adopt a novel modelling approach for enhancement of leaching– efficiency of PGE values.</li> </ul>		
81.	Structural study of the Baula Ultramafic Complex using micro-mesoscopic structures and trace of melt inclusions: Its implication on developing a new strategy for prospecting and exploration of rare minerals of PGE in Bangur and extension areas of Kendujhar and Balasore Districts, Odisha	IIT Bombay	<p>Prof. Tapas Kumar Biswal Designation: Professor Email/Fax/Ph/Mob: tkbiswal@iitb.ac.in, Ph: 022-25767280; Mobile: +91-98198 07067</p>	<ol style="list-style-type: none"> <li>1. Structural mapping of the Baula Ultramafic Complex vis a vis Bangur PGE mineralized zone. Preliminary field work will be carried out in extended areas around Betei, Balasore district Odisha.</li> <li>2. Fault plane analysis, correlation between geometry of the ultramafic units with transpression and transtension setting. This will tell whether a chonolith type model can be applied to Baula Ultramafic Complex.</li> <li>3. Melt inclusion study of PGE bearing zones, in olivines of Bangur Gabbro and in the mineralized veins (sulphide) to understand the fluid condition of mineralization. Temperature of homogenization, pore fluid pressure and stress orientation from Fluid Inclusion Plane will be estimated. This will throw light on stress orientation at the timing of faulting and mineralization.</li> </ol>	<p>Rs. 26.4789 lakh 3 years</p>	Recommended
82.	Development of Ready-To-Use Assorted Sand for Construction Activities from Zinc Refining Wastes and Marble Powder	Manipal University Jaipur, Dehmi Kalan, Jaipur-303007, Rajasthan	<p>Dr. Bhavna Tripathi Associate Professor Phone: Office: +91 141 3999100 Ext: 739 Mobile: +91 9460383678; +91</p>	<ul style="list-style-type: none"> <li>• To compare gradation, void content, particle packing, and physical properties of natural sand with mixture of ISF slag, Jarosite, and Marble Powder in different proportions.</li> <li>• To develop ready-to-use assorted sand for applications in concrete and mortar.</li> <li>• To study mechanical and durability properties of concrete and mortar mixes prepared by using assorted sand in comparison with control mixes.</li> <li>• To study the microstructural properties of concrete and mortar mixes prepared by using assorted sand in comparison with control mixes.</li> </ul>	<p>Rs. 49.5501 lakh 3 years</p>	Resubmit to PERC with industrial partner Recommended

			9772501975	<ul style="list-style-type: none"> <li>To assess the leaching potential (TCLP) of heavy metals from assorted sand and concrete/mortar mixes for establishing environmental suitability.</li> </ul>		
83.	To study the fire retardancy of nano-ATH in polymers	Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Nagpur  CIPET	Dr. S.B. Rai Principal Scientist suchitarai1968@gmail.com, 9423680346 suchitarai@jnarddc.gov.in	<ul style="list-style-type: none"> <li>To investigate the effect of nano-ATH as fire retardant filler in polymers</li> <li>To examine the mechanical and flame retardant properties of polymer/ ATH composites obtained using ATH fillers with different particle size.</li> <li>New process and product development using aluminiumtrihydroxide and polymer matrix.</li> </ul>	Rs. 56.98 Lakhs 2 years	Resubmit to PERC with industrial partner Recommended
84.	Techno-economic Survey of Aluminium Scrap Recycling in India	Jawaharlal Nehru Aluminium Research Development and Design Centre Wadi, Amravati Road, Nagpur – 440 023 (Maharashtra)	JNARDDC Telephone: 07104-220017, 220476 Fax: 07104-220942 Email: rnchouhan@gmail.com, rnchouhan@jnarddc.gov.in Website: www.jnarddc.gov.in	<ul style="list-style-type: none"> <li>To promote all types of Metal Recycling (Ferrous, Non-Ferrous and Ship-Recycling) within India and to get official Industry status for the Metal Recycling Industry in India.</li> <li>To liaise with various Indian Government authorities and educate them about the benefits of Metal Recycling.</li> <li>To works with International Organizations such as Bureau of International Recycling (BIR) based in Belgium and/or other National Associations such as Institute of Scrap Recycling Industries (ISRI) based in USA and Bureau of Middle East Recycling (BMR) based in Dubai.</li> </ul>	Rs. 53.55 lakhs  1 year	Resubmit to PERC with more focused S&T objectives Recommended
85.	Development of soft magnetic Ni based thin films with refractory metal	Kumaraguru College of Technology Coimbatore – 641035 Tamilnadu, India.	Dr. R. Kannan Assistant Professor	<ul style="list-style-type: none"> <li>To optimize the electroplating bath conditions for Ni based refractory metal element (such as NiTa, NiW, NiRe, NiMo and NiNb, etc.,) nano thin films</li> <li>To investigate the effect of refractory metal elements concentration, temperature, additives, and annealing on the structural, mechanical, electrical and magnetic properties of Nibased refractory metal element thin films</li> </ul>	Rs.25.3257 lakh 3 years	Theoretical in nature Not recommended

				<ul style="list-style-type: none"> <li>•To establish the electrochemical work station set up facility; this would enable us to measure the polarization and corrosion resistance of the coated Ni based refractory element thin films.</li> <li>•To promote multidisciplinary research collaboration with the support of interested government &amp; private R&amp;D centres and use the developed materials for real time</li> </ul>		
86.	Understanding Nature's Strategies to form Functional Materials by Surface Selective Ultrafast Nonlinear Spectroscopy	IIT Roorkee, Roorkee 247667, India	Dr. Ravindra Pandey Assistant Professor Email: rpandey.fcy@iitr.ac.in Office: +91 1332 285522 M: +91-7579273524	<p>Despite a great interest in protein-mediated biomineralization in general and calcium oxalate monohydrate (COM) modification by osteopontin (OPN) in particular, microscopic details of the control mechanisms are poorly understood. A detailed picture of OPN–COM interactions will help define structure-based design principles for synthesizing bio-inspired materials, as well as novel therapies against pathological mineralization processes such as kidney stone disease. The proposed project aims at providing this information.</p> <p>Important questions likely to be answered are:</p> <p>(1) How and why does OPN interact differently with different COM surfaces? What is the structural basis for recognition and specific interactions?</p> <p>(2) What secondary and tertiary structural motifs are used by OPN to interact with surfaces, and at an even higher level of structural resolution - which amino acid side chains are used to recognize and orient OPN at COM surfaces?</p> <p>(3) Are interactions between OPN side chains and a COM surface direct, or are these mediated by water molecules?</p>	Rs. 237.0879 lakh 3 years	Not in thrust area of S&T Not Recommended
87.	Development of multi-helical flow reactor as an alternative to mixer-settler for integrated extraction/stripping and phase	CSIR- Institute of Minerals and Materials Technology Bhubaneswar - 751 013, Odisha, INDIA	Dr. Sambasiva Rao Ganneboyina (PI), Senior Scientist Phone: +91-674-237-9226	<ol style="list-style-type: none"> <li>1. Simulation of extraction of metal ions in multi helical flow reactors.</li> <li>2. Over all optimization to maximize the performance of the reactor for both extraction and phase separation with experimental demonstrations.</li> </ol>	Rs. 49.621 Lakhs 3 years	Theoretical in nature Not focused Not recommended

	separation for hydrometallurgical applications	IIT (ISM) Dhanbad	(O), +91-9437562468 (M) Email: <a href="mailto:gsamba118@gmail.com">gsamba118@gmail.com</a> , <a href="mailto:samba@immt.res.in">samba@immt.res.in</a>			
88.	Development of a FBG sensor based monitoring system for assessment of industrial storage bunkers.	CSIR-Central Mechanical engineering research institute (CMERI) M. G. Avenue, Durgapur-713209 West Bengal, India  NIT Durgapur	PI: Dr. Debashis Das Email: <a href="mailto:d_das@cmeri.res.in">d_das@cmeri.res.in</a> & Mobile No.: 9434080866)	<ul style="list-style-type: none"> <li>• Development of a FBG sensor network system with strain sensors for monitoring of critical zones of bunker.(NIT Durgapur)</li> <li>• Development of a statistical assessment mechanism through laboratory experimentation in relation to industrial storage bunker response. (CSIR-CMERI Durgapur)</li> <li>• Development of guidelines for monitoring of industrial storage bunkers for early assessment of damage. (CSIR-CMERI Durgapur &amp; NIT Durgapur)</li> </ul>	Rs. 50.347 lakh 3 years	Not in S&T thrust area Not Recommended
89.	Cantilever based Piezoelectric Energy Harvester for Low Power Wireless Protocols deployed in Mines.	National Institute of Technology Raipur, G.E. Road, Raipur Chhatisgarh-492010	Dr. AlokNaugarhiya Assistant Professor, Email- <a href="mailto:anaugarhiya@nitrr.ac.in">anaugarhiya@nitrr.ac.in</a> Phone- +91-8989828339	Operation of underground coal mines is associated with the generation of toxic and inflammable gases such as methane (CH <sub>4</sub> ), hydrogen sulphide, sulphur oxide (H <sub>2</sub> S) etc. caused due to spontaneous combustion of coal. Thus accurate and reliable detection of these gases has to be monitored in early stages. However, conventional wired gas sensors linking system has been overtaken by wireless networks for continuous monitoring. With advancement in wireless technology and microelectromechanical system (MEMS), it is quite obvious that these WSNs has to be used in the places that are not easy for deploying sensors. Nowadays for extracting deep seated coal, mining activities are tending towards deeper into the earth where environmental condition becomes more and more critical. Hence battery operated sensor network has to suffer with the replacement once it	Rs. 41.0236 lakh 3 years	Pertains to Ministry of Coal and Ministry of power Not recommended

				will dead, so there is a need of such source of electrical energy which will provide a continuous operation of the sensor nodes present at the mines. Piezoelectric energy harvester with the higher conversion efficiency among the other transduction method is reported in this work keeping in mind the proper safety of mines worker without any disturbance in data processing system due energy hunger.		
90.	Corrosion Mapping of Mining Structures and Machineries and Recommendation of Appropriate Corrosion Mitigation Methods	CSIR- Central Electrochemical Research Institute (CECRI) Karaikudi – 630 003, Tamil Nadu	Dr. S.M.Ganesan, Senior Scientist Phone: +91-4565-241374 (O); +91-9789325377 (M) Email: smganesan@cecri.res.in	<ul style="list-style-type: none"> <li>• Mine water analysis for the presence of oxides, chlorides, sulphides, sulphates, carbonates, bicarbonates, etc. pH level and dissolved oxygen in mine waste water</li> <li>• Analysis of the alkali contents in the soil and mine water</li> <li>• Survey of the buried pipeline structures and collection of the cathodic protection system already in place</li> <li>• Study of anodic and cathodic behaviours of minerals collected from the mine</li> <li>• Assessment of the possibilities of galvanic corrosion between mine slurries and mine structures</li> <li>• Determining the erosion-corrosion characteristics of the fluids carried by the pipeline and pumping systems</li> </ul>	Rs.46.6786 lakh  3 years	Generic in nature Not recommended
91.	IMPROVING FRACTURE RESISTANCE OF ROCKS THROUGH ADHESIVE BONDING FOR UNDERGROUND MINING APPLICATIONS	Indian Institute of Technology (ISM), Dhanbad.	DrRashmiRanj an Das (PI) Assistant Professor	<ul style="list-style-type: none"> <li>• To study the effect of crack orientation angles (<math>\beta = 30^{\circ}, 45^{\circ}</math> and <math>80^{\circ}</math>) on ultimate fracture load of the granite based rock in absence (<math>F_u</math>) in absence of any polymeric adhesive, which is to be considered as the base parameter for studying effect of adhesive bonded coating on fracture resistance of the rock specimen.</li> <li>• To determine the load causing the crack to grow (<math>F_g</math>) and the corresponding crack branching angle (<math>\theta_c</math>) in a granite based rock specimen with different crack orientation angles (<math>\beta</math>) = <math>30^{\circ}, 45^{\circ}</math> and <math>80^{\circ}</math> in absence of any polymeric adhesive. This data would be used for validating the FEM model to be developed for detailed analysis of fracture growth in</li> </ul>	Rs. 14.73467 lakh 3 years	Recommended



				<p>the rock specimen.</p> <ul style="list-style-type: none"> <li>To study the effect of effect of different types of polymeric adhesive (LOCTITE® FIXMASTER and HIT-RE-500-V3) based coatings with coating parameters: <math>h_0 = 1</math> mm, <math>2a_0 = 13</math> mm, and <math>2b_0 = 11.5</math> mm (Figure 2) on ultimate fracture load of the granite based rock specimen (<math>F_{ua}</math>) with crack orientation angle (<math>\beta</math>) = 30 degrees.</li> <li>This leads to identification of a superior grade of adhesive having better effect on the fracture resistance of the rock specimen measured through the ultimate fracture load of the granite based rock specimen (<math>F_{ua}</math>).</li> <li>To study the effect of variation of coating parameters (<math>h_0</math>: 1 mm, 2 mm and 3 mm, <math>2a_0</math>: 13mm, 15 mm, and 17 mm, and <math>2b_0</math>: 11.5 mm, 13.5 mm, and 15.5 mm) of the superior adhesive on ultimate fracture load of the granite based rock specimen (<math>F_{ua}</math>) with crack orientation angle (<math>\beta</math>) = 30 degrees.</li> <li>To study the effect of crack orientation angle (<math>\beta = 30^\circ, 45^\circ</math> and <math>80^\circ</math>) on ultimate fracture load of the granite based rock (<math>F_{ua}</math>) in presence of the superior polymeric adhesive coating (<math>h_0 = 1</math> mm, <math>2a_0 = 13</math> mm, and <math>2b_0 = 11.5</math> mm).</li> </ul>		
92.	DEVELOPMENT OF A COMMUNITION PROCESS FOR IMPROVING THE BALL MILL EFFICIENCY AND SELECTIVE SIZE OUTPUT THROUGH HYDRO-SQUEEZING	National Institute of Technology Karnataka, Surathkal	Dr. HarshaVardhan Associate Professor Email- harshanitk@gmail.com Mobile No: +91-9449084373	<ul style="list-style-type: none"> <li>Studies on mineralogical characterization of iron ores to identify the operating window through matrix mapping for ball mill communiton process. Evaluation and gap analysis of conventional ball mill process.</li> <li>Development of new process to bridge the gaps to improve the ball mill efficiency and built-in flexibility for selective sizeoutput.</li> <li>Demonstration of the new concept through lab scale equipment design development, bench scale tests and results.</li> </ul>	Rs.27.025 lakh 3 years	Recommended
93.	Enhancement in the recovery of large and smaller particles in a	Indian Institute of Technology, RoparNangal Road,	Dr. NeelkanthNirmalkar, Mob. No.	<p>(A) Fabrication of nanobubble generator and its characterization.</p> <p>❖ Design of the nanobubble generator based on the hydrodynamic cavitation.</p>	Rs. 64.595lakh 3 years	Resubmit to PERC with industry partner Recommended

	floatation column using micro-nanobubble technology	Rupnagar, Punjab 140001	+918264733672  Email: <a href="mailto:n.nirmalkar@iiitrpr.ac.in">n.nirmalkar@iiitrpr.ac.in</a>	<ul style="list-style-type: none"> <li>❖ Optimization of the dimensions of nanobubble geometry based on CFD modelling of cavitating flow.</li> <li>❖ Characterization of nanobubbles generated by the fabricated geometry in terms of the concentration, mean bubble diameter and surface potential using Nanoparticle tracking analysis(NTA) and dynamic light scattering (DLS).</li> <li>❖ To study the effect of geometry, air flow rate, surface tension of the liquid on the concentration of nanobubbles.</li> <li>❖ To find the optimum combination of parameters in order to generate maximum number of nanobubbles.</li> <li><b>(B)</b> Characterization of deposition of nanobubbles on hydrophobic surface. <ul style="list-style-type: none"> <li>❖ To image surface nanobubbles on HOPG surface deposited from the bulk liquid using Atomic force microscopy(AFM).</li> <li>❖ Effect of temperature, pH and salts on the density and size of the surface nanobubbles using AFM.</li> <li>❖ Estimation of the contact angle with varying degrees of surface hydrophobicity using AFM.</li> <li>❖ Measurement of the stiffness of surface nanobubbles by mechanical mapping for different values of load on the cantilever.</li> <li>❖ To image and force mapping of the interaction between microbubble and nanobubbles.</li> </ul> </li> <li><b>(C)</b> Fabrication of flotation cell and experiments on it <ul style="list-style-type: none"> <li>❖ Fabrication of a flotation column with provision of nanobubblegeneratorembedded in the circuit.</li> <li>❖ Flotation release analysis prior to experiments in presence of nanobubbles.</li> <li>❖ Characterization of the sample coal and mineral particles in term of the size and shape using photographic technique (post processing using ImageJ).</li> </ul> </li> </ul>		
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				patent This will start immediately after completion of 1 <sup>st</sup> year of the project.		
94.	New ductile magnesium alloy development using rear earth materials for industrial applications using innovate disintegrated melt deposition technologies	National Institute of Technology NIT Calicut 673601 Kerala.	Dr. Jagadeesha T Assistant Professor <a href="mailto:jagdishg@nitc.ac.in">jagdishg@nitc.ac.in</a> 8547193373	(i) To design and synthesize new Mg-X-RE alloys by the judicious selection of major (Al, Ti, Sn etc.) and minor alloying elements (RE metals such as Y, Ce, Nd etc.) to form high stability strengthening phases dispersed in the Mg-primary matrix. (ii) To perform thermal/heat-treatments on the developed Mg-X-RE alloys to obtain efficient temperature-time window for effective control/manipulation of microstructure. (iii) To investigate effect of hot rolling on Mg-X-RE (iv) To identify the best strength/ductility regime of the developed Mg-alloys in terms of formability. (V) To achieve plastic processing at lower temperature (its found plastic processing of magnesium alloys is usually conducted at elevated temperatures, at which additional slip systems become available. ) (v) To investigate the effect of various RE metals, thermal treatments and hot rolling process on the Mg-texture, morphology, volume fraction and distribution of the secondary phases and their cumulative effect on the microstructure - mechanical - high temperature behavior of the new Mg-alloys. (vi) To identify components/structures in aerospace and automotive applications for effective material replacements with the developed high strength/ductile/thermally stable Mg-X-RE alloys	Rs. 289.4625 lakhs  3 years	Not focused and practical output Generic in nature Not recommended
95.	Red Mud Tiles and Blocks for X – and Y- Ray Attenuation	CSIR-Advanced Materials and Processes Based Institute (AMPRI), Bhopal - 462026	Dr. ShabiThankar ajSalammal, Scientist, Phone : +91 (0)755 2457257 (Extn: 1140) Mobile : +91	The main objective of this project is to fabricate high dense sintered red mud tiles for high energy X-and γ-ray shielding applications. This main objective articulates into few specific objectives (SO). The amount of works involved in each specific objective is discussed in methodology section.  SO1: Thorough chemical composition and mineralogical analysis of red mud.	Rs. 46.1686 Lakhs  3 years	Repetitive work Not recommended

			8754743511 E-mail : <a href="mailto:tsshabi@ampr.i.res.in">tsshabi@ampr.i.res.in</a> , <a href="mailto:tsshabi@gmail.com">tsshabi@gmail.com</a>	SO2: Thermochemical analysis of pure red mud and red mud-Bi <sub>2</sub> O <sub>3</sub> /BaSO <sub>4</sub> /Ba(OH) <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> mixtures. SO3: Optimization and confirmation of formation of high dense phases like Bi <sub>12</sub> SiO <sub>20</sub> Bi <sub>2</sub> FeO <sub>3</sub> , BaSiO <sub>3</sub> , and BaTiO <sub>3</sub> . SO4: Quantification of high dense crystalline phases using powder X-ray diffraction pattern. SO5: Fabrication of mold with various dimensions. SO6: High temperature compaction of partially melted red mud. SO7: Evaluation of X- and γ- ray attenuation coefficients of tiles and cubes. SO8: Testing of mechanical properties of tiles and cubes. SO9: Publication and dissemination.		
96.	Development of hybrid hydrogel beads for simultaneous metal recovery and treatment of acid mine drainage.	PSG Institute of Advanced Studies, P.B. No:1609, Coimbatore-641004, Tamilnadu	Dr. R. Selvakumar Associate Professor in Nanobiotechnology, Telephone No: 0422 4344000 Mobile no: 09944920032 E-mail: selvabiotech@gmail.com; rsk@psgias.ac.in	1. To develop an extremophilic acid tolerant, sulfate-reducing bacterial consortium that can reduce metal sulfate present in mine tailings. 2. To develop hollow core, acid tolerant, biodegradable polymer-based hydrogel matrix that can entrap the developed bacterial consortium. 3. To synthesis a zirconium based nanoceramic sorbent for adsorption of heavy metals present in AMD 4. To develop hybrid nano-bio beads with the target bacterial consortium and nanosorbent. 5. To study the effects of hybrid nano-bio beads on metal recovery and treatment of AMD 6. To determine the remediation efficacy testing using appropriate model plant.	Rs. 36.67 lakh 3 years	Recommended
97.	To establish a world class underground Instrumentation gallery at Balaghat mine of MOIL Ltd.	MOIL Limited, Nagpur-440013	Dr. G. G. Manekar Sr. Deputy General Manager(Mines) ggmanekar61@gmail.com	To fulfill the objectives, it is proposed to create underground instrumentation gallery and procure and install all types of rock mechanics instruments and monitor the behavior of strata continuously. A database will then be created out of the obtained data from the instruments and the knowledge acquired will be disseminated to the underground mines for designing optimum mine workings with	Rs.234.8 lakhs 3 years	Not in S&T thrust area Not recommended

			Ph. No. 91-712-2806243	maximum safety		
98.	Unravelling hazards of Uranium to earthworms, from gene to population	NIT Rourkela, Rourkela–769008, Odisha, India.	Dr. Monalisa Mishra, monalisamishra2010@gmail.com Ph no.09583866756	1. The proposed study will assess the effect of uranium on the earthworm population of Jaduguda mines. The work will be carried out with the following objectives. 2. Accumulation of Uranium concentration in the earthworm body. 3. Genes and protein expression of earthworm. 4. Measurement of reactive oxygen species and antioxidant profile. 5. Cytotoxicity and genetic change. 6. Major and ultrastructural changes in various parts of the body. 7. Functional change in the neuronal activity. 8. Walking and behavioral test of earthworm. 9. Mortality, growth and survivability.	Rs. 49.6 lakh  3 years	Not in S&T thrust area Not recommended
99.	Feasibility Study of Low Grade Magnesite Powder as a Potential Additive with Building Materials for Enhanced Thermal Comfort	National Institute of Technology Tiruchirappalli	Dr. S. Suresh Mob. No. 9842483638 E-mail: ssuresh@nitt.edu	i. To analyses the thermal(thermal conductivity, specific heat), mechanical(compressive strength), physical(moisture content,density, porosity, wettability ) and radiative properties(emissivity) of low grade Magnesite(LGM) powder. ii. To realize the role of low grade Magnesite(LGM) ore powder as additive with different composition(0-35% by weight) in Mortar and to determine the optimum composition. iii. To experimentally investigate the thermal comfort performance of the optimized admixture in the simulatedreal time building scenario.	Rs. 51.232 lakh  3 years	Recommended
100.	Effective Utilisation of Mine Waste Tailings and Washeries as an alternative in Precast Structural Elements	Kongu Engineering College, Perundjurai, Erode dt-638060 Tamilnadu, India	Dr. G.S. Rampradheep , Associate Professor, Mob. No. 9750033500 Email: gsramcivil34@gmail.com	<ul style="list-style-type: none"> <li>To utilize the coal washeries and iron ore tailings in constructions and to introduce an alternate material in construction industry based on its suitability.</li> <li>To determine the adaptability, particle orientation, compatibility of physical and chemical properties of mining wastes and conventional construction n material.</li> <li>To determine the mechanical, durability and structural behavior of partially replaced mine wastes in concretes, mortars, bricks, paving blocks, tiles etc.,</li> <li>To reduce the cost of construction materials</li> </ul>	Rs. 49.635 lakh 3 years	Pertains to Ministry of coal Not recommended

				by effective utilization of these mining wastes in an eco-friendly way by conducting cost-benefit analysis.		
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