

Minutes of 52nd Meeting of Standing Scientific Advisory Group (SSAG) held on 24th December 2020 at 11 am through video conferencing. The list of participants is enclosed at Annexure-A.

Secretary, Ministry of Mines and chairperson, SSAG welcomed the members to the 52nd SSAG meeting. The SSAG considered projects which were reviewed and recommended by the Project Evaluation and Review Committee (PERC). Chairman / Secretary (Mines) suggested the need to focus on applied R&D projects with outcomes which could be translated into benefits for the society. Chairman also suggested to compile a synopsis of 3 – 4 pages of outcomes of all projects completed in the last 10 years in a uniform format. The same should be placed in the SATYABHAMA portal of Ministry of Mines with contact link of the concerned implementing agency for the benefit of interested users.

2. Shri Satendra Singh, Joint Secretary (Mines) and Chairman, PERC briefed the SSAG regarding the review process of the project proposals conducted by PERC before recommending these to the SSAG. During the current year project proposals were invited online under the Science & Technology Scheme of Ministry of Mines. A special feature of this year is that a new portal dedicated to the scheme, viz. SATYABHAMA portal (research.mines.gov.in), was launched by Hon'ble Minister of Mines and the new project proposals were received through this portal. A total number of 383 project proposals were received online on the portal. A two-stage review process was adopted to evaluate the proposals for recommendation to Standing Scientific Advisory Group (SSAG). The first stage comprised of preliminary screening of the proposals done by a team of experts constituted by Ministry of Mines. Based on the guidelines as adopted in 14th PERC, the experts conducted pre-screening of the proposals. After screening, 102 proposals covering five areas, namely (i) Geosciences and Exploration (ii) Mining (iii) Mineral Processing & recovery from waste (iv) Metal Extraction (Metallurgical processes) and (v) Alloys, specialty materials and product; were short listed for further review in the second stage.

The 20th meeting of PERC was held on 23-25 November, 2020 through video conferencing. Out of the 102 new project proposals, PERC has recommended 28 proposals for funding under S&T Programme Scheme of Ministry of Mines. Besides, progress reports/ final reports, requests for time extension, etc. of ongoing projects under the S&T Programme Scheme of Ministry of Mines were also considered by the committee for review in the 20th PERC Meeting and Review Meeting of PERC (held on 21-22 January, 2020).

3. Dr. Pradeep Singh, Director (Technical), Ministry of Mines, Member Secretary, SSAG presented the proposals recommended by PERC before the SSAG.

4 After detailed deliberations the recommendation of SSAG is as below :

1	Project No.	SNTMOM/10/2020		
	Project Title	Studying, modelling and evolving a new blasting technique for open cast mine excavations near the proximity of structures (beyond 50 m) using the structural response analysis and dynamic FEM		
	Institution	CSIR Central Institute of Mining and Fuel Research		
	Project Cost	Rs. 38.19 lakhs		
	Duration	3 years		
Recommendation	Approved			
	PI should include cost benefit analysis in the project deliverables.			
	(in Rs. lakhs)			
		1 st year	2 nd Year	3 rd Year
	Capital	-	-	-
Recurring	12.73	12.73	12.73	
Total	12.73	12.73	12.73	
2	Project No.	SNTMOM/14/2020		
	Project Title	Recovery of copper from water bodies nearby copper mines using microbial electrochemical systems		
	Institution	Indian Institute of Technology ISM Dhanbad		
	Industry Partner	Hindustan Copper Limited		
	Project Cost	Rs. 25 Lakhs		
	Duration	18 months		
	Recommendation	Approved.		
(in Rs. lakhs)				
		1 st year	2 nd Year (6 months)	
Capital		6	-	
Recurring		9.848	9.152	
Total	15.848	9.152		
3	Project No.	SNTMOM/47/2020		
	Project Title	Corrosion and wear resistant advanced coatings based on high entropy alloys for mining equipments		
	Institution	Indian Institute of Technology Delhi		
	Project Cost	Rs. 24 Lakhs		
	Duration	2 years		
Recommendation	Approved subject to submission of consent letter by PI from the end user /Industry/MECL.			
(in Rs. lakhs)				

		1 st year	2 nd Year	
	Capital	-	-	
	Recurring	10.857	13.143	
	Total	10.857	13.143	
4	Project No.	SNTMOM/52/2020		
	Project Title	Design, analysis and development of Rheo gravity die cast Al-15Mg2Si-4.5Si composite based light weight Bucket links for Mining Excavators		
	Institution	CSIR Central Mechanical Engineering Research Institute		
	Industry Partner	LA-CAST Metals & Components Pvt. Ltd., Mahalaxmi Auto Industries		
	Project Cost	Rs. 55 Lakhs		
	Duration	2 years		
	Recommendation	Approved (in Rs. lakhs)		
		1 st year	2 nd Year	
	Capital	30	-	
	Recurring	12.65	12.35	
	Total	42.65	12.35	
5	Project No.	SNTMOM/73/2020		
	Project Title	Development of Empirical Methodology for Design of Crown Pillar during transition from opencast to underground mining for Indian Mines		
	Institution	CSIR Central Institute of Mining and Fuel Research		
	Project Cost	Rs. 37.89850 lakh		
	Duration	3 Yrs		
	Recommendation	Approved. The design criteria of crown pillar should also include the entire phase of the mine i.e., including the conceptualised post-closure status of overlying opencast mine. (in Rs. lakhs)		
		1 st year	2 nd Year	3 rd Year
	Capital	19.85	-	-
	Recurring	8.336	9.24	.4725
	Total	28.186	9.24	.4725
6	Project No.	SNTMOM/90/2020		
	Project Title	Determination of optimum safe distance of toe of dump from crest of open pit for stability of pit slope under different geo-mining conditions		
	Institution	CSIR Central Institute of Mining and Fuel Research		

	Industry Partners	Hindustan Zinc Limited, Tata Steel and SAIL	
	Project Cost	Rs. 52 Lakhs	
	Duration	2 years	
	Recommendation	Approved subject to submission of Endorsement of DGMS for the project proposal by the PI (in Rs. lakhs)	
		1 st year	2 nd Year
	Capital	13	-
	Recurring	19.35	19.65
	Total	32.35	19.65
7	Project No.	SNTMOM/91/2020	
	Project Title	Development of Ready-To-Use Assorted Sand for Construction Activities from Zinc Refining Wastes and Marble Powder	
	Institution	Manipal University Jaipur	
	Industry Partner	Hindustan Zinc Limited and Manak Sangemermer Pvt. Ltd	
	Project Cost	Rs. 30 Lakhs	
	Duration	2 years	
	Recommendation	Approved. (in Rs. lakhs)	
		1 st year	2 nd Year
	Capital	6.45	-
	Recurring	12.41953	11.13047
	Total	18.86953	11.13047
8	Project No.	SNTMOM/123/2020	
	Project Title	Preparation of synthetic zircon from zircon minerals of beach sand, its characterization and value addition as thermal and electrical insulator	
	Institution	C.V. Raman Global University, Bhubaneswar (NGO - Society Raman Education)	
	Project Cost	Rs. 10 Lakhs (seed money)	
	Duration	1 year	
	Recommendation	Approved (in Rs. lakhs)	
		1 st year	
	Capital	2.5	
	Recurring	7.5	
	Total	10	
9	Project No.	SNTMOM/125/2020	

	Project Title	Geo-technological evaluation of Bauxite and Laterite deposits of Chhattisgarh State by using Geospatial technology under Smart Mining 4.0	
	Institution	Jawaharlal Nehru Aluminium Research Development and Design Centre	
	Collaborating Partner	Chhattisgarh Council of Science & Technology, Government of Chhattisgarh, Raipur	
	Project Cost	Rs. 45 Lakhs	
	Duration	2 Years	
	Recommendation	To be examined in file along with all the documents received	
10	Project No.	SNTMOM/141/2020	
	Project Title	Development of low cost filler material utilizing Lithomargic clay for paint industry as per IS 68 2006 standard	
	Institution	Jawaharlal Nehru Aluminium Research Development and Design Centre	
	Industry Partner	Mundle Paint and Chemicals	
	Project Cost	Rs.45 Lakhs	
	Duration	2 Years	
	Recommendation	To be examined in file along with all the documents received	
11	Project No.	SNTMOM/169/2020 / (SNTMOM/269/2020)	
	Project Title	Fabrication of Al ₂ O ₃ containing cellulose based Ag NPs encapsulated Collagen dressing and investigation of its Therapeutic Opportunities in Diabetic Wound Healing	
	Institution	Kalinga Institute of Industrial Technology & JNARDDC, Nagpur	
	Project Cost	Rs. 30 Lakhs (Rs. 15 Lakhs - KIIT and Rs. 15 lakhs –JNARDDC)	
	Duration	2 years	
	Recommendation	To be examined in file along with all the documents received.	
12	Project No.	SNTMOM/171/2020	
	Project Title	Design, Synthesis and Fabrication of Donor-Acceptor Based Fluorescent Sensing Organic-Nanomaterials and Devices for Detection and Quantification of Rare Earth Elements in Minerals	
	Institution	University of Calcutta	
	Project Cost	Rs. 54.935 Lakhs	
	Duration	2 years	
	Recommendation	Approved	
		(in Rs. lakhs)	
		1 st year	2 nd Year
	Capital	31	-

		Recurring	12.07	11.865
		Total	43.07	11.865
13	Project No.	SNTMOM/230/2020		
	Project Title	Extraction and isolation of Al, K, Li, Rb and Cs from Mica		
	Institution	CSIR Institute of Minerals and Materials Technology		
	Project Cost	Rs. 9.975 Lakhs		
	Duration	1 year		
	Recommendation	Approved		
		(in Rs. lakhs)		
			1 st year	
	Capital	-		
	Recurring	9.975		
	Total	9.975		
14	Project No.	SNTMOM/234/2020		
	Project Title	Development of Process for Making High Pure Quartz or Silica and Metallic Silicon from Low Grade Naturally Occurring Quartz		
	Institution	CSIR Institute of Minerals and Materials Technology		
	Project Cost	Rs 15 lakh (seed money)		
	Duration	1 year		
	Recommendation	Approved		
		(in Rs. lakhs)		
			1 st year	
	Capital	-		
	Recurring	15		
	Total	15		
15	Project No.	SNTMOM/253/2020		
	Project Title	Development of India specific scientific framework to promote the beneficial reuse, rehabilitation or remediation of landscape affected by abandoned mines or flyash ponds or slags		
	Institution	Indian Institute of Technology BHU Varanasi, Indian Institute of Technology Bombay, National Institute of Technology Rourkela, National Institute of Technology Karnataka Surathkal, Indian Institute of Technology Guwahati, Indian Institute of Technology Indore, Indian Institute of Technology Roorkee, Indian Institute of Technology ISM Dhanbad, Indian Institute of Technology Kharagpur, Indian Institute of Technology Madras, International Institute of Information Technology Hyderabad, Nalanda University and Indian Institute of Technology Kanpur		
	Industry Partner	MOIL, Hindalco and Triveni Earth Movers		

	Project Cost	Rs. 49.98 Lakhs	
	Duration	2 years	
	Recommendation	To be examined in file along with all the documents received.	
16	Project No.	SNTMOM/273/2020	
	Project Title	Employing metallurgical silicon to develop new class of silicon composites for structural applications	
	Institution	Indian Institute of Technology Bhubaneswar	
	Project Cost	Rs 37.997 Lakhs	
	Duration	2 years	
	Recommendation	Approved	
		(in Rs. lakhs)	
		1 st year	2 nd Year
	Capital	25	-
	Recurring	6.0985	6.8985
	Total	31.0985	6.8985
17	Project No.	SNTMOM/282/2020	
	Project Title	Bioreaching of Lithium from minerals and low grade ores of Indian origin	
	Institution	CSIR Institute of Minerals and Materials Technology	
	Project Cost	Rs. 12.936 Lakhs (seed money)	
	Duration	1 year	
	Recommendation	Approved	
		(in Rs. lakhs)	
		1 st year	
	Capital	-	
	Recurring	12.936	
	Total	12.936	
18	Project No.	SNTMOM/290/2020	
	Project Title	Production of high pure manganese metal organic frameworks (Mn-MOFs) and their derivatives from low grade manganese ores for supercapacitor applications	
	Institution	CSIR Institute of Minerals and Materials Technology	
	Project Cost	Rs. 10 lakhs (seed money)	
	Duration	1 year	
	Recommendation	Approved	
		(in Rs. lakhs)	
		1 st year	
	Capital	-	
	Recurring	10	
	Total	10	

19	Project No.	SNTMOM/293/2020	
	Project Title	Development of Alternative flux Material from Red Mud for Steel Dephosphorization	
	Institution	CSIR Central Electrochemical Research Institute	
	Project Cost	Rs. 10 lakhs (seed money)	
	Duration	1 year	
	Recommendation	Approved.	
		(in Rs. lakhs)	
		1 st year	
	Capital	-	
	Recurring	10	
	Total	10	
20	Project No.	SNTMOM/295/2020	
	Project Title	Development of prototype aluminium seat frame for passenger buses.	
	Institution	Jawaharlal Nehru Aluminium Research Development and Design Centre and Automotive Research Association of India	
	Project Cost	Rs. 100 Lakhs (JNARDDC – Rs. 60 Lakhs & ARAI – Rs. 40 Lakhs)	
	Duration	2 Years	
	Recommendation	To be examined in file along with all the documents received.	
21	Project No.	SNTMOM/330/2020	
	Project Title	Sustainable ion exchange resin-based technology for rare earth extraction	
	Institution	Indian Institute of Technology Madras	
	Project Cost	Rs. 52.51 lakhs	
	Duration	2 years	
	Recommendation	Approved	
		(in Rs. lakhs)	
		1 st year	2 nd Year
	Capital	-	-
	Recurring	25.725	26.775
	Total	25.725	26.775
22	Project No.	SNTMOM/331/2020	
	Project Title	Bio-electrochemical reclamation of titanium and other rare earth metals from red mud waste using a modified microbial fuel cell approach	
	Institution	PSG Institute of Advanced Studies (NGO - PSG and Sons Charities)	

	Project Cost	Rs. 9.99 lakhs (seed money)
	Duration	1 year
	Recommendation	Approved (in Rs. lakhs)
		1 st year
	Capital	-
	Recurring	9.99
	Total	9.99
23	Project No.	SNTMOM/355/2020
	Project Title	Exploring the Practicability of Extracting Platinum and Palladium from the Mineral Beds of Sittampudi Village in Salem District of Tamil Nadu An Experimental and Molecular Dynamics Approach
	Institution	National Institute of Technology Trichy
	Project Cost	Rs. 15 lakhs (seed money)
	Duration	1 year
	Recommendation	Approved (in Rs. lakhs)
		1 st year
	Capital	9.4
	Recurring	5.6
	Total	15
24	Project No.	SNTMOM/380/2020
	Project Title	Development of perovskite based materials using inexpensive RE mixed oxides precursors derived from Indian beach sands for room temperature magnetic refrigeration applications
	Institution	CSIR Indian Institute of Chemical Technology
	Project Cost	Rs. 51 lakhs (MoM – 31 lakh, CSIR – 20 lakhs)
	Duration	1 year
	Recommendation	Approved subject to the condition that capital cost component from Ministry of Mines is not more than Rs. 15 Lakhs. Balance of capital cost i.e. Rs. 20 lakhs to be shared by CSIR. (in Rs. lakhs)
		1 st year
	Capital	15
	Recurring	16
	Total	31
25	Project No.	SNTMOM/386/2020
	Project Title	Recovery of galena, sphalerite from lead zinc tailings by integrated energy efficient ultrafine comminution and novel shear floc-flotation and its impact on downstream Paste fill

	Institution	Indian Institute of Technology Hyderabad and CSIR Institute of Minerals and Materials Technology	
	Industry Partner	Hindustan Zinc Limited	
	Project Cost	Rs. 25 lakhs (Rs. 10 Lakh (seed money)(MoM) + Rs. 15 lakhs (HZL))	
	Duration	1 year	
	Recommendation	Approved	
		Indian Institute of Technology Hyderabad (in Rs. lakhs)	
			1 st year
	Capital	3.5	
	Recurring	3.5	
	Total	7	
		CSIR Institute of Minerals and Materials Technology (in Rs. lakhs)	
			1 st year
	Capital	2.5	
	Recurring	0.5	
	Total	3	
26	Project No.	SNTMOM/391/2020	
	Project Title	Additive manufacturing of Rare-earth based Nd-Fe-B magnets	
	Institution	International Advanced Research Centre for Powder Metallurgy and New Materials	
	Project Cost	Rs. 52 lakhs	
	Duration	2 years	
	Recommendation	Not approved. Proof of concept needs to be established by PI.	
27	Project No.	SNTMOM/396/2020	
	Project Title	Innovative approach to recover chromite value from low-grade chromite ore, fines and slimes by dry and wet beneficiation technique.	
	Institution	CSIR Institute of Minerals and Materials Technology	
	Project Cost	Rs. 10 Lakh (seed money)	
	Duration	1 year	
	Recommendation	Approved	
		(in Rs. lakhs)	
			1 st year
	Capital	-	
	Recurring	10	
	Total	10	

28	Project No.	SNTMOM/397/2020
	Project Title	Process development for the recovery of tungsten values from lean grade Indian resources.
	Institution	CSIR Institute of Minerals and Materials Technology
	Project Cost	Rs. 10 Lakh (seed money)
	Duration	1 year
	Recommendation	Approved
		(in Rs. lakhs)
		1 st year
	Capital	-
	Recurring	10
	Total	10

5.0 Acceptance of final report and closure of completed projects.

The final reports of the following 18 projects were considered by the SSAG. After deliberation, the SSAG accepted the final report and approved the closure of the following projects and release of remaining funds, subject to finalization of accounts and other relevant procedures.

1. Development of super thermal aluminium (STAL) conductor for Indian power sector - JNARDDC Nagpur & NPTDC Hyderabad (Jointly)
2. Simulation of simultaneous rock fractures at multiple scales IIT Delhi
3. Urban Li Battery Mining: Physio-Chemical separation of used Li ion Batteries for Recovery of Li, Co, Ni active materials and Cu, Al Metal - Nonferrous Materials Technology Development Centre, Hyderabad
4. Production of geopolymer based construction material from pond ASH: an industrial waste - Gandhi Institute of Engineering and Technology, Gunupur, Odisha
5. Novel synthesis routes for high purity kesterites (CZTS:Cu-Zn-Sn-S;Cu-Zn-Sn-Se) and development of cost kesiterite based solar PV cells and modules - Non Ferrous Materials Technology Development Centre, Hyderabad
6. Recyclability strategy or value-added utilization of iron/manganese ore tailing/ low grade ore: evaluation of energy storage capacities - Institute of Minerals and Materials Technology, Bhubaneswar
7. Extraction of potash values from silicate rocks - Indian Institute of Technology, Roorkee, Uttarakhand
8. Mineralogical and geochemical characterization of Indian glauconites for alternative potassium fertilizers - Indian Institute of Technology, Bombay and NGRI, Hyderabad (jointly)
9. Development of low density emulsion explosives for energy efficient blasting in environmentally sensitive areas - IIT, Dhanbad (Indian School of Mines), Jharkhand

10. Technology Development (TRL-7) for calico-thermic reduction of rare earth metal oxides and establishment of pilot plant for extraction and purification of samarium - Non Ferrous Material Technology Development Centre (NFTDC), Hyderabad
11. Development of Nickel containing steel from chromite over burden - Indian Institute of Technology, Kharagpur and Institute of Minerals & Materials Technology, Bhubaneswar (Jointly)
12. Processed Sea sand for construction and other purposes - Saveetha Engineering College, Saveetha Nagar, Thandlam, Chennai
13. Novel Approach to Recover Individual Valuable Heavy Minerals from Pyriboleferrous Beach and Dune Sand Deposits - CSIR-Institute of Minerals & Materials Technology, Bhubaneswar
14. Nano Processing of Industrial Rejects for use as additives in Mix designs for improved pozzolanic reaction efficiency - Jawaharlal Nehru Aluminium Research Development and Design Centre(JNARDDC), Nagpur and VNIT, Nagpur
15. Study of Alkaline -Carbonatite complexes as potential resources for REEs,Nb-Ta and U-Th. - IIT Roorkee
16. Assessment and prediction of land surface deformation due to underground metal mining in northern aravali range of hills using microwave remote sensing data sets and ground based Observations - IIT, Dhanbad(Indian School of Mines), Jharkhand
17. Study the feasibility of treatment of seepage water from chromite mine quarries of Odisha - National Institute of Technology, Rourkela
18. Optimization of digestion efficiency in Bayer process by ascertaining the ideal size fraction of bauxite feed. - Jawaharlal Nehru Aluminium Research Development & Design Centre, JNARDDC, Nagpur

All the PIs will submit 3-4 page write-up of their projects in the prescribed proforma so that the same can be uploaded on the SATYABHAMA Portal of Ministry of Mines.

6.0 Foreclosure of projects.

After deliberation, the SSAG approved foreclosure of the following 3 projects recommended by PERC:

1. Geochemical Studies of the Archaean Greenstone Belts of the Aravall I Craton, Northwestern Indian Shield: Implications for Crustal Evaluation and Economic Potential - Aligarh Muslim University, Aligarh
2. Development of a Low-cost Portable Optical Reflectance Spectrometer for Mining and Mineralogy- Indian Institute of Technology, Madras
3. Development of capacitive deionization technology for the extraction of germanium and selenium: Two elements of strategic relevance- IIT, Madras, Chennai

7.0 Time extension to ongoing projects.

- a. In view of the COVID-19 pandemic, the SSAG has approved for a time extension for all ongoing projects

- b. As per recommendations of PERC, time extension to following ongoing projects have also been approved:
1. Processed Sea sand for construction and other purpose - Saveetha Engineering College, Saveetha Nagar, Thandlam, Chennai (upto June 2020)
 2. Development of Metal-Graphene Alloys, Department of Materials Engineering Indian Institute of Science, Bangalore (upto December 2020)
 3. Value added electrochemical Devices from Zircon obtained from Beach Sands of Odisha Indian Institute of Technology, Bhubaneswar (upto September 2020)
 4. Improving fracture resistance of rocks through adhesive bonding for underground mining application IIT, Dhanbad (Indian School of Mines), Jharkhand (upto June 2020)
 5. Novel Approach to Recover Individual Valuable Heavy Minerals from Pyriboleferrous Beach and Dune Sand Deposits CSIR-Institute of Minerals & Materials Technology, Bhubaneswar (upto March, 2020)
 6. Fabrication of Advanced Ceramic Nano-coatings for Automotive Applications Jawaharlal Nehru Aluminium Research Development and Design Centre(JNARDDC), Nagpur and Christ University (upto June 2021)
 7. Techno-economic Survey of Aluminium Scrap Recycling in India - Jawaharlal Nehru Aluminium Research Development and Design Centre(JNARDDC), Nagpur and MRAI (upto March 2021)
 8. Process Feasibility studies for the development of High Purity Aluminium through segregation process- Nonferrous Materials Technology Development Centre ,NFTDC, Hyderabad (upto June 2021)
 9. Processing of spent and natural graphite for energy and aerospace application - Institute of Minerals & Materials Technology, CSIR-IMMT, Bhubaneswar (upto May 2022).
 10. Production and certification of certified reference materials (CRMs) for the analysis of aluminium alloy - Jawaharlal Nehru Aluminium Research Development &Design Centre, JNARDDC, Nagpur (upto May 2022).
 11. Direct production of Fe-Cr-Ni-Mn stainless alloy from mine waste by thermalplasma process - Institute of Minerals & Materials Technology, IIMT, CSIR Bhubaneswar (upto May 2022)
 12. High performance of rare earth metal as Electrode material for super-capacitor application and fuel cell - Velammal Institute of Technology, Panchetti, Chennai (upto March 2021)
 13. Development of open cell aluminium foams for heat sink and EMI shielding Application - Advanced Materials and Processes Research Institute (AMPRI), Bhopal (upto April 2022)
 14. Recovery of scandium metal from acid leach liquor from titanium mineral industries CSIR-National Institute for Interdisciplinary Science and Technology (NIIST),Thiruvananthapuram (upto January 2022)
 15. To study the fire retardancy of nano-ATH in polymer - Jawaharlal Nehru Aluminium Research Development and Design Centre(JNARDDC), Nagpur and CIPET (upto March 2021)
 16. Utilization of aluminium dross to achieve zero waste – A bench scale study - Jawaharlal Nehru Aluminium Research Development & Design Centre,JNARDDC, Nagpur - CSIR-National Environmental Engineering Research Institute, Nagpur (upto June 2021)

17. Value addition of calcined bauxite for possible use as abrasives in water jet cutting applications - SSN College of Engg, Chennai (upto January 2022)
 18. 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 (upto March 2021)
 19. Bench scale study on extraction of pure Silica and smelter grade Aluminium Fluoride from Coal Fly Ash (CFA) JNARDDC, Nagpur (upto March 2021)
 20. Rare earth mineral concentration in the beach sands of uttarakannada coast:their economic viabilities and sustainable mining - SDM college of Engineering & Technology, Dhavalagiri, Dharwad (upto January, 2021)
 21. Treatment of Acid Mine Drainage for Heavy Metal Removal - IIT, Mandi (upto March 2021)
 22. Development of Novel Nanoporous hollow Fibre membrane based unit for the effective treatment of Mine waste water - National Institute of Technology Karnataka, NIT Surathkal (upto June 2021)
 23. Development of a novel underground mining method for exploitation of Chromite deposits from friable ore body and host rocks of Sukinda Valley, Odisha - IIT, Kharagpur (upto June 2021)
 24. Assessment of Udaipur rock phosphate, low grade potassium feldspar and lignite mine waste for the development of organo-mineral fertilizer formulations - ICAR- Central Arid Zone Research Institute, Near ITI Circle, Jodhpur, Rajasthan (upto December 2021)
 25. Integrated Geological, Geochemical and Geophysical studies for the delineation of Chromitite extensions in Nuggihalli Schist Belt and implications for Ni-Cu+-PGE mineralization - CSIR- National Geophysical Research Institute and IISC, Bangalore (upto December 2021)
 26. Development of grapheme based membranes from graphite ore for desalination - CSIR- National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram and CSIR-NML, Madras, Chennai (upto June 2021)
 27. Mineral chemistry, isotope geochemistry, geochronology, and metallogeny of rare and rare-earth metals present in the alkaline-carbonatite complexes associated to the Narmada-Son rift zone, western India - Banaras Hindu University, BHU, Varanasi (upto September 2021)
8. Secretary (Mines) suggested that the Science and Technology Programme Scheme of Ministry of Mines should be decentralized. As the Scheme is technical in nature, Geological Survey of India, an attached office under Ministry of Mines should be made nodal agency for implementation of the Scheme.
9. It was suggested that in future SSAG meetings, there should be provision in SSAG meeting for virtual interaction with PI to get more insight of the project proposal.

The meeting concluded with vote of thanks to the chair.

ANNEXURE-A

List of Participants of Minutes of 52nd Meeting of Standing Scientific Advisory Group (SSAG) held on 24th December 2020 at 11 am through video conferencing.

SN	Name	Portfolio
1.	Shri Anil Kumar Jain	Secretary (Mines)
2.	Shri Satendra Singh	Joint Secretary (Mines)
3.	Shri Pradeep Singh	Director (Tech.), Mines
4.	Shri Sanjeev Verma	Director (Mines)
5.	Prof. Suddhasatwa Basu	Director CSIR IMMT
6.	Prof Virendra Kumar Tewari	Director, IIT, Kharagpur
7.	Dr. Anupam Agnihotri	Director, JNARDDC
8.	Dr. H.S. Venkatesh	Director, NIRM
9.	Dr. K. Balasubramanian	Director, NFTDC
10.	Dr. Ranjit Rath	CMD, MECL & DG, GSI I/c
11.	Shri Arun Kumar Shukla	CMD, HCL, Kolkata
12.	Shri M. P Mishra	NALCO, Bhubaneswar
13.	Dr. C. N. Ghosh	CSIR – CIMFR
14.	Dr. Ch. R. V. S. Nagesh	DMRL, Hyderabad
15.	Prof. Shalivahan	IIT (ISM), Dhanbad
16.	Dr. Dillip Ranjan Kanungo	IBM, Nagpur

Leave of absence granted to other members.