

**Government of India  
Ministry of Mines  
Metal-4 Section**

**Minutes of 56<sup>th</sup> Meeting of Standing Scientific Advisory Group (SSAG) held on 18<sup>th</sup> December 2023 at 3 pm at Khanij Kaksh, Shastri Bhawan, New Delhi.**

56th Meeting of Standing Scientific Advisory Group (SSAG) was held on 18<sup>th</sup> December 2023 at 3 pm at Khanij Kaksh, Shastri Bhawan, New Delhi under the chairmanship of Shri V. L. Kantha Rao, Secretary, Ministry of Mines on 18<sup>th</sup> December, 2023. The list of participants is enclosed at Annexure-A.

2. At the outset, Shri Pradeep Singh, Director (Technical), Ministry of Mines and Member Secretary, SSAG welcomed the members to the 56th SSAG meeting. Initiating the proceedings of the meeting, the Member Secretary briefed the SSAG about the evaluation and review process of the project proposals conducted by PERC before recommending these to the SSAG. It was briefed that the Project proposals were invited online on SATYABHAMA portal of the ministry of mines i.e. research.mines.gov.in under the Science & Technology Scheme of Ministry of Mines. A total number of 82 project proposals were received on the SATYABHAMA portal till the last day of the deadline for receiving the proposal i.e. 4<sup>th</sup> December 2023. Thereafter a two-stage evaluation & review process was adopted to evaluate the proposals for making recommendation to Standing Scientific Advisory Group (SSAG). The first stage comprised of preliminary screening of the proposals which done by a team of experts. Based on the guidelines as adopted in 14<sup>th</sup> PERC, the experts conducted pre-screening of the proposals. After screening, 45 proposals were short listed for further evaluation in the second stage by the PERC. Thereafter, agenda items were taken up for discussion. The details of the discussion and the decisions taken on the project proposals and other agenda items are discussed in the following Paras.

**3. Agenda Item No. 1 – Consideration of new Project Proposals:**

i. The Member Secretary made a detailed power point presentation on the proposals recommended by PERC before the SSAG. It was informed that the 23<sup>rd</sup> meeting of PERC was held on 11<sup>th</sup> December, 2023 at Nagpur. The 45 proposals which were recommended by a team of Experts were examined and evaluated after detailed discussion with the PIs concerned by 23<sup>rd</sup> PERC. Out of these 45 project proposals, PERC recommended 15 projects for consideration of the SSAG in its next meeting. It was informed by the Member secretary that Out of 15 project proposals, the PERC made conditional recommendations in respect of 05 project proposals.

ii. After detailed deliberations the SSAG approved following 14 project proposals. One proposal which was recommended by the PERC on certain conditions was not approved by the

SSAG as the PI concerned failed to meet the condition by the deadline. The details of the approved 14 project proposals are as under:

**1. Project No.: SNTMOM/952/2023:**

|                                |   |                            |  |
|--------------------------------|---|----------------------------|--|
| Project Title                  | Recovery of Molybdenum, Nickel and Alumina values from spent hydrotreating catalyst of HPCL and Demonstration at Pilot plant (TRL-7) and techno-economic feasibility studies. |                            |  |
| Institution                    | Non Ferrous Materials Technology Development Centre   |                            |  |
| Principal Investigator         | D Lokeswara Rao<br>(9849604852, lokesh@nftdc.res.in)  |                            |  |
| Project Cost & Duration        | Rs.82,16,500 .00<br>(Rs.33,16,500.00 (MoM) + Rs.49,00,000.00 Industry Partner)<br><br>1 Year  |                            |  |
| Industry Partner /Contribution | Hindustan Petroleum Corporation Ltd<br>Rs.49,00,000.00  |                            |  |
| SSAG Remarks                   | <b>Approved with the following timeline for release of funds of the MOM contribution.</b>   |                            |  |
|                                | <b>Item</b>   | <b>1<sup>st</sup> Year</b> |  |
|                                | Amount  | Rs. 33.165 lakh            |  |

**2. Project No. SNTMOM/958/2023**

|                                |  |                            |                            |
|--------------------------------|--|----------------------------|----------------------------|
| Project Title                  | Development of Eco-friendly molten salt extraction process for Nd and Pr and Establishment of 25-50 TPY Nd and Pr Metal Extraction Demonstration Plant (TRL7-8) for Rare Earth Magnet Production             |                            |                            |
| Institution                    | Non Ferrous Materials Technology Development Centre(NFTDC)   |                            |                            |
| Principal Investigator         | Nirmal Panda<br>(9985509736, nirmalpanda@nftdc.res.in)   |                            |                            |
| Project Cost & Duration        | Rs.15,98,19,000.00<br>(Rs.2,95,35,000.00 (MoM) + Rs.13,02,84,000.00 Industry Partner)<br><br>2 Years   |                            |                            |
| Industry Partner /Contribution | Midwest Rare Earth<br>Rs. 13,02,84,000.00  |                            |                            |
| SSAG Remarks                   | <b>Approved with the following timeline for release of funds of the MOM contribution:</b>  |                            |                            |
|                                | The Institute may also consider involving Department of Science and Technology (DST) in the project even with no financial contribution from DST for better outcome and commercial viability of the project: |                            |                            |
|                                | <b>Item</b>  | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> |
|                                | Amount   | Rs.208.54 Lakh             | Rs. 86.81 lakh             |
|                                |  |                            | <b>Total</b>               |
|                                |  |                            | Rs. 295.35 lakh            |

**3. Project No. SNTMOM/961/2023:**

| Project Title                  | Process for production of ATH with high whiteness using non-metallurgical grade bauxite by following soda sintering process  |                      |                      |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
|--------------------------------|--|----------------------|----------------------|----------------------|-------|--------|-------------|-------------|-------------|------|----------------------|----------------------|-------|--------|-------------|-------------|-------------|
| Institution                    | Jawaharlal Nehru Aluminium Research Development and Design Centre and Institute of Chemical Technology (ICT) Mumbai Indian Oil Campus Bhubaneswar  |                      |                      |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
| Principal Investigator         | PRACHIPRAVA PRADHAN<br>(9438760367, <a href="mailto:prachi@jnarddc.gov.in">prachi@jnarddc.gov.in</a> )   |                      |                      |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
| Project Cost & Duration        | Rs.69,00,000.00<br>(Rs.59,00,000.00(MoM) + Rs.10,00,000.00 Industry Partner)<br><br>2 Years.   |                      |                      |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
| Industry Partner /Contribution | NIKNAM Chemicals PVT. LTD- Rs.10,00,000.00   |                      |                      |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
| SSAG Remarks                   | <p><b>Approved with the following timeline for release of funds of the MOM contribution:</b></p> <p><b>JNARDDC:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs. 20 lakh</td> <td>Rs. 20 lakh</td> <td>Rs. 40 lakh</td> </tr> </tbody> </table> <p><b>Institute of Chemical Technology (ICT) Mumbai Indian Oil Campus Bhubaneswar:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs.9.5 lakh</td> <td>Rs.9.5 lakh</td> <td>Rs. 19 lakh</td> </tr> </tbody> </table> | Item                 | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total | Amount | Rs. 20 lakh | Rs. 20 lakh | Rs. 40 lakh | Item | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total | Amount | Rs.9.5 lakh | Rs.9.5 lakh | Rs. 19 lakh |
| Item                           | 1 <sup>st</sup> Year   | 2 <sup>nd</sup> Year | Total                |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
| Amount                         | Rs. 20 lakh  | Rs. 20 lakh          | Rs. 40 lakh          |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
| Item                           | 1 <sup>st</sup> Year   | 2 <sup>nd</sup> Year | Total                |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |
| Amount                         | Rs.9.5 lakh  | Rs.9.5 lakh          | Rs. 19 lakh          |                      |       |        |             |             |             |      |                      |                      |       |        |             |             |             |

**4. Project No. SNTMOM/967/2023:**

| Project Title                  | Synthesis of precipitated silica from waste beach sand tailings and its value addition in glass making industries  |                      |                      |                      |       |        |               |               |               |
|--------------------------------|--|----------------------|----------------------|----------------------|-------|--------|---------------|---------------|---------------|
| Institution                    | C. V. Raman Global University (NGO- Society Raman Education)   |                      |                      |                      |       |        |               |               |               |
| Principal Investigator         | SUNITA ROUSTRAY<br>(7327847963<br><a href="mailto:sroustray1@cvrce.edu.in">sroustray1@cvrce.edu.in</a> )   |                      |                      |                      |       |        |               |               |               |
| Project Cost & Duration        | Rs. 32,96,700<br>(Rs.26,37,000.00 (MoM) + Rs.6,59,700.00 Industry Partner)<br><br>2 Years.   |                      |                      |                      |       |        |               |               |               |
| Industry Partner /Contribution | Khemka Refractories Pvt Ltd and Indian Rare Earths Limited (Rs.6,59,700.00).   |                      |                      |                      |       |        |               |               |               |
| SSAG Remarks                   | <p><b>Approved with the following timeline for release of funds of the MOM contribution:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs.21.23 lakh</td> <td>Rs. 5.14 lakh</td> <td>Rs.26.37 lakh</td> </tr> </tbody> </table> | Item                 | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total | Amount | Rs.21.23 lakh | Rs. 5.14 lakh | Rs.26.37 lakh |
| Item                           | 1 <sup>st</sup> Year   | 2 <sup>nd</sup> Year | Total                |                      |       |        |               |               |               |
| Amount                         | Rs.21.23 lakh  | Rs. 5.14 lakh        | Rs.26.37 lakh        |                      |       |        |               |               |               |

## 5. Project No. SNTMOM/970/2023

|                                |  |                            |                            |                            |               |
|--------------------------------|--|----------------------------|----------------------------|----------------------------|---------------|
| Project Title                  | Enhanced selective recovery of selenium and tellurium from copper anode slime using secondary mineral waste  |                            |                            |                            |               |
| Institution                    | Maulana Azad National Institute of Technology Bhopal   |                            |                            |                            |               |
| Principal Investigator         | Suresh Sundaramurthy<br>(9244184604<br>sureshs@manit.ac.in)  |                            |                            |                            |               |
| Project Cost & Duration        | Rs.31,44,036.00<br>(Rs.25,14,036.00 (MoM) + Rs.6,30,000 Industry Partner)<br><br>3 Years.  |                            |                            |                            |               |
| Industry Partner /Contribution | SR Ferro Alloys Pvt. Ltd.<br>Rs. 6,30,000.00   |                            |                            |                            |               |
| SSAG Remarks                   | <b>Approved with the condition that letter of interest from HINDALCO should also be submitted within 1 month and with the following timeline for release of funds of the MOM contribution:</b> |                            |                            |                            |               |
|                                | <b>Item</b>  | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>3<sup>rd</sup> Year</b> | <b>Total</b>  |
|                                | Amount   | Rs.8.27 lakh               | Rs.9.49 lakh               | Rs. 7.38 lakh              | Rs.25.14 lakh |

## 6. Project No. SNTMOM/990/2023:

|                                |   |                            |                            |                            |                 |
|--------------------------------|---|----------------------------|----------------------------|----------------------------|-----------------|
| Project Title                  | Design and experimental studies of the fiber-reinforced polymer (FRP) solid rock bolts for underground mine support systems |                            |                            |                            |                 |
| Institution                    | Indian Institute of Technology ISM Dhanbad  |                            |                            |                            |                 |
| Principal Investigator         | Kalyan<br>(9546385852,kks.ismstudent@gmail.com)   |                            |                            |                            |                 |
| Project Cost & Duration        | Rs. 96,98,500.00<br>(Rs. 77,58,800.00(MOM) + Rs.19,39,700.00 Industry Partner)<br><br>3 Years,                              |                            |                            |                            |                 |
| Industry Partner /Contribution | Texmin and CSK Technologies (Rs.19,39,700.00)   |                            |                            |                            |                 |
| SSAG Remarks                   | <b>Approved with the following timeline for release of funds of the MOM contribution:</b>                                   |                            |                            |                            |                 |
|                                | <b>Item</b>   | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>3<sup>rd</sup> Year</b> | <b>Total</b>    |
|                                | Amount  | Rs. 54.236 lakh            | Rs. 11.676 lakh            | Rs.11.676 lakh             | Rs. 77.588 lakh |

## 7. Project No. SNTMOM/991/2023

| Project Title                  | An optimal approach for the retrieval of value-added substances from secondary aluminum black dross   |                      |                |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
|--------------------------------|---|----------------------|----------------|------|----------------------|----------------------|-------|--------|----------------|---------------|----------------|------|----------------------|----------------------|-------|--------|--------------|---------------|-------------|
| Institution                    | Sri Ramakrishna Engineering College, Coimbatore (NGO-SNR Sons Charitable Trust) and Jawaharlal Nehru Aluminium Research Development and Design Centre   |                      |                |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
| Principal Investigator         | Bhagyanathan Chandragandhi<br>(9047026422,bhagyanathan.chandragandhi@srec.ac.in)  |                      |                |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
| Project Cost & Duration        | Rs. 56,64,534.00<br>(Rs.45,31,000.00(MoM) + Rs.11,33,534.00 Industry Partner)<br><br>2 Years,   |                      |                |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
| Industry Partner /Contribution | Phoenix Alloys<br>Rs.11,33,534.00   |                      |                |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
| SSAG Remarks                   | <p><b>Approved with the following timeline for release of funds of the MOM contribution:</b></p> <p><b>Sri Ramakrishna Engineering College, Coimbatore (NGO-SNR Sons Charitable Trust):</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs. 18.52 lakh</td> <td>Rs. 9.79 lakh</td> <td>Rs. 28.31 lakh</td> </tr> </tbody> </table> <p><b>JNARDDC:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs.7.87 lakh</td> <td>Rs. 9.13 lakh</td> <td>Rs. 17 lakh</td> </tr> </tbody> </table> |                      |                | Item | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total | Amount | Rs. 18.52 lakh | Rs. 9.79 lakh | Rs. 28.31 lakh | Item | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total | Amount | Rs.7.87 lakh | Rs. 9.13 lakh | Rs. 17 lakh |
| Item                           | 1 <sup>st</sup> Year  | 2 <sup>nd</sup> Year | Total          |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
| Amount                         | Rs. 18.52 lakh  | Rs. 9.79 lakh        | Rs. 28.31 lakh |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
| Item                           | 1 <sup>st</sup> Year  | 2 <sup>nd</sup> Year | Total          |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |
| Amount                         | Rs.7.87 lakh  | Rs. 9.13 lakh        | Rs. 17 lakh    |      |                      |                      |       |        |                |               |                |      |                      |                      |       |        |              |               |             |

## 8. Project No. SNTMOM/994/2023

| Project Title                  | Development of a two-stage e-waste segregation system using transfer learning  |                      |                |      |                      |                      |       |        |               |               |                |
|--------------------------------|--|----------------------|----------------|------|----------------------|----------------------|-------|--------|---------------|---------------|----------------|
| Institution                    | Visvesvaraya National Institute of Technology, Nagpur and Indian Institute of Information Technology, Nagpur   |                      |                |      |                      |                      |       |        |               |               |                |
| Principal Investigator         | Abhinav Arya<br>(9620699344,abhinav@mme.vnit.ac.in)  |                      |                |      |                      |                      |       |        |               |               |                |
| Project Cost & Duration        | Rs.11,83,000.00<br>(Rs.9,53,000.00(MoM) + Rs.2,30,000.00 Industry Partner)<br>2 Years,   |                      |                |      |                      |                      |       |        |               |               |                |
| Industry Partner /Contribution | M/s. SML2029 Research and Consulting Pvt. Ltd.<br>Rs.2,30,000.00   |                      |                |      |                      |                      |       |        |               |               |                |
| SSAG Remarks                   | <p><b>Approved with the following timeline for release of funds of the MOM contribution:</b></p> <p><b>VNIT, Nagpur :</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs.3.835 lakh</td> <td>Rs. 3.11 lakh</td> <td>Rs. 6.945 lakh</td> </tr> </tbody> </table> |                      |                | Item | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total | Amount | Rs.3.835 lakh | Rs. 3.11 lakh | Rs. 6.945 lakh |
| Item                           | 1 <sup>st</sup> Year   | 2 <sup>nd</sup> Year | Total          |      |                      |                      |       |        |               |               |                |
| Amount                         | Rs.3.835 lakh  | Rs. 3.11 lakh        | Rs. 6.945 lakh |      |                      |                      |       |        |               |               |                |

|  |                       |                            |                            |                |
|--|-----------------------|----------------------------|----------------------------|----------------|
|  | <b>IIIT, Nagpur :</b> |                            |                            |                |
|  | <b>Item</b>           | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>Total</b>   |
|  | Amount                | Rs. 1.535 lakh             | Rs. 1.05 lakh              | Rs. 2.585 lakh |

**9. Project No. SNTMOM/999/2023:**

|                                |  |                            |                            |                            |                            |              |        |              |           |                |
|--------------------------------|--|----------------------------|----------------------------|----------------------------|----------------------------|--------------|--------|--------------|-----------|----------------|
| Project Title                  | A process for preparation of cost-effective nanofluid from bauxite wastes and ferrous-based tailings for HVAC application  |                            |                            |                            |                            |              |        |              |           |                |
| Institution                    | Gandhi Institute for Technology, Bhubaneswar (NGO- Balaram Panda Trust)  |                            |                            |                            |                            |              |        |              |           |                |
| Principal Investigator         | Amar Kumar Das (9437436972, amar.das120@gift.edu.in)   |                            |                            |                            |                            |              |        |              |           |                |
| Project Cost & Duration        | Rs.25,03,800.00 (Rs.2003800.00 (MoM) + Rs.5,00,000.00 Industry Partner)<br>3 Years   |                            |                            |                            |                            |              |        |              |           |                |
| Industry Partner /Contribution | GTS Limited (Rs. 5,00,000.00)  |                            |                            |                            |                            |              |        |              |           |                |
| <b>SSAG Remarks</b>            | <b>Approved with the following timeline for release of funds of the MOM contribution:</b>  |                            |                            |                            |                            |              |        |              |           |                |
|                                | <table border="1"> <tr> <td><b>Item</b></td> <td><b>1<sup>st</sup> Year</b></td> <td><b>2<sup>nd</sup> Year</b></td> <td><b>3<sup>rd</sup> Year</b></td> <td><b>Total</b></td> </tr> <tr> <td>Amount</td> <td>Rs. 8.5 lakh</td> <td>Rs.7 lakh</td> <td>Rs. 4.538 lakh</td> <td>Rs. 20.038 lakh</td> </tr> </table> <p>The Project needs to be hand holded. JNARDDC and NFTDC will mentor the PI.</p> | <b>Item</b>                | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>3<sup>rd</sup> Year</b> | <b>Total</b> | Amount | Rs. 8.5 lakh | Rs.7 lakh | Rs. 4.538 lakh |
| <b>Item</b>                    | <b>1<sup>st</sup> Year</b>   | <b>2<sup>nd</sup> Year</b> | <b>3<sup>rd</sup> Year</b> | <b>Total</b>               |                            |              |        |              |           |                |
| Amount                         | Rs. 8.5 lakh   | Rs.7 lakh                  | Rs. 4.538 lakh             | Rs. 20.038 lakh            |                            |              |        |              |           |                |

**10. Project No. SNTMOM/1001/2023:**

|                                |  |
|--------------------------------|--|
| Project Title                  | White Hydrogen from scrap aluminum dross transforming industrial waste into a fuel source for the future                   |
| Institution                    | Institute of Chemical Technology (ICT) Mumbai Indian Oil Campus Bhubaneswar and Kalinga Institute of Industrial Technology |
| Principal Investigator         | Pyarimohan Dehury (8280008066,p.dehury@iocb.ictmumbai.edu.in)  |
| Project Cost & Duration        | Rs.91,65,200.00 (Rs.73,32,000.00 (MoM) + Rs.18,33,200.00 - Industry Partner)<br>3 Years                                    |
| Industry Partner /Contribution | Hollingsworth and Vose Advanced Materials Pvt. Ltd. (Rs.18,33,200.00)  |
| <b>SSAG Remarks</b>            | <b>Approved with the following timeline for release of funds of the MOM contribution:</b>                                  |

|   |                            |                            |                            |                 |
|---|----------------------------|----------------------------|----------------------------|-----------------|
| <b>Institute of Chemical Technology (ICT) Mumbai Indian Oil Campus Bhubaneswar:</b> |                            |                            |                            |                 |
| <b>Item</b>   | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>3<sup>rd</sup> Year</b> | <b>Total</b>    |
| Amount  | Rs. 37.916 lakh            | Rs. 13.196 lakh            | Rs. 9.272 lakh             | Rs. 60.384 lakh |
| <b>Kalinga Institute of Industrial Technology</b>                                   |                            |                            |                            |                 |
| <b>Item</b>   | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>3<sup>rd</sup> Year</b> | <b>Total</b>    |
| Amount  | Rs. 6.132 lakh             | Rs. 4.032 lakh             | Rs. 2.772 lakh             | Rs. 12.936 lakh |

**11. Project No. SNTMOM/1008/2023:**

|                                |  |                            |                            |                            |              |        |                 |                 |                 |
|--------------------------------|--|----------------------------|----------------------------|----------------------------|--------------|--------|-----------------|-----------------|-----------------|
| Project Title                  | Quantum Confinement Technology Powered Advanced High Throughput Hydrometallurgical Separation of the Rare Earths to Pilot TRL 5 to 7   |                            |                            |                            |              |        |                 |                 |                 |
| Institution                    | Banaras Hindu University,  |                            |                            |                            |              |        |                 |                 |                 |
| Principal Investigator         | Somenath Garai<br>(8400098731, sgarai@bhu.ac.in)   |                            |                            |                            |              |        |                 |                 |                 |
| Project Cost & Duration        | Rs.89,20,800.00<br>(Rs.73,45,800.00 (MoM) + Rs.15,75,000.00 Industry Partner)<br><br>2 Years,  |                            |                            |                            |              |        |                 |                 |                 |
| Industry Partner /Contribution | NFTDC<br>Rs. 15,00,000.00  |                            |                            |                            |              |        |                 |                 |                 |
| SSAG Remarks                   | <b>Approved with the following timeline for release of funds of the MOM contribution:</b><br><table border="1"> <tr> <td><b>Item</b></td> <td><b>1<sup>st</sup> Year</b></td> <td><b>2<sup>nd</sup> Year</b></td> <td><b>Total</b></td> </tr> <tr> <td>Amount</td> <td>Rs. 38.304 lakh</td> <td>Rs. 35.154 lakh</td> <td>Rs. 73.458 lakh</td> </tr> </table> | <b>Item</b>                | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>Total</b> | Amount | Rs. 38.304 lakh | Rs. 35.154 lakh | Rs. 73.458 lakh |
| <b>Item</b>                    | <b>1<sup>st</sup> Year</b>   | <b>2<sup>nd</sup> Year</b> | <b>Total</b>               |                            |              |        |                 |                 |                 |
| Amount                         | Rs. 38.304 lakh  | Rs. 35.154 lakh            | Rs. 73.458 lakh            |                            |              |        |                 |                 |                 |

**12. Project No. SNTMOM/1014/2023:**

|                                |   |
|--------------------------------|---|
| Project Title                  | Setting up of a 100 kg Coal Fly-ash Pilot Processing unit to extract high-purity fumed Silica and Aluminium fluoride from CFA |
| Institution                    | Jawaharlal Nehru Aluminium Research Development and Design Centre   |
| Principal Investigator         | Manoj Tukaramji Nimje<br>(0992129423, mtnimje@jnarddc.gov.in)   |
| Project Cost & Duration        | Rs.3,75,75,000.00<br>(Rs.3,00,75,000.00(MoM) + Rs.75,00,000.00 Industry Partner)<br><br>1 Years, 6 Month                      |
| Industry Partner /Contribution | Rs. 75,00,000.00 by Ministry of Power or its PSUs.  |

|                     |  |                            |                            |                 |
|---------------------|--|----------------------------|----------------------------|-----------------|
| <b>SSAG Remarks</b> | <b>Approved subject to condition of co-funding of at least Rs. 75 lakhs from Ministry of Power or its PSUs and with the following timeline for release of funds of the MOM contribution:</b> |                            |                            |                 |
|                     | <b>Item</b>  | <b>1<sup>st</sup> Year</b> | <b>2<sup>nd</sup> Year</b> | <b>Total</b>    |
|                     | Amount   | Rs. 280 lakh               | Rs. 20.75 lakh             | Rs. 300.75 lakh |

**13. Project No. SNTMOM/1024/2023:**

| Project Title                  | Pilot Plant Extraction of Rare Earth Elements (Scandium, Neodymium, and Europium) from KMML Titanium industrial waste   |                      |                      |                      |       |        |            |                |                 |
|--------------------------------|---|----------------------|----------------------|----------------------|-------|--------|------------|----------------|-----------------|
| Institution                    | CSIR National Institute for Interdisciplinary Science and Technology  |                      |                      |                      |       |        |            |                |                 |
| Principal Investigator         | Dr. M. Sundararajan<br>(08129075511, <a href="mailto:rajanmsundar77@yahoo.com">rajanmsundar77@yahoo.com</a> )   |                      |                      |                      |       |        |            |                |                 |
| Project Cost & Duration        | Rs. 76,91,000.00<br>(Rs.14.93 lakhs (MoM)+ Rs. 46 lakhs (CSIR-NIIST) + Rs.15.98 lakh - Industry Partner)<br><br>2 Years   |                      |                      |                      |       |        |            |                |                 |
| Industry Partner /Contribution | The Kerala Minerals and Metals Ltd. -Rs. 15.98 lakh.  |                      |                      |                      |       |        |            |                |                 |
| <b>SSAG Remarks</b>            | <b>Approved with the following timeline for release of funds of the MOM contribution:</b>   |                      |                      |                      |       |        |            |                |                 |
|                                | <table border="1"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs. 8 lakh</td> <td>Rs. 6.93 lakhs</td> <td>Rs. 14.93 lakhs</td> </tr> </tbody> </table> | Item                 | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total | Amount | Rs. 8 lakh | Rs. 6.93 lakhs | Rs. 14.93 lakhs |
|                                | Item  | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | Total                |       |        |            |                |                 |
| Amount                         | Rs. 8 lakh  | Rs. 6.93 lakhs       | Rs. 14.93 lakhs      |                      |       |        |            |                |                 |
|                                |   |                      |                      |                      |       |        |            |                |                 |

**14. Project No. SNTMOM/1034/2023 :**

|                                |  |
|--------------------------------|--|
| Project Title                  | Setting up of pilot cum demonstration plant for recovery of alumina and value-added products from fly ash  |
| Institution                    | CSIR Institute of Minerals and Materials Technology and Kalinga Institute of Industrial Technology   |
| Principal Investigator         | Kali Sanjay<br>(9338291970, <a href="mailto:ksanjay@immt.res.in">ksanjay@immt.res.in</a> )   |
| Project Cost & Duration        | Rs.3,92,16,000.00<br>(Rs.1,96,16,000.00 (MoM) + Rs.1,96,00,000.00 Industry Partner)<br><br>3 Years,  |
| Industry Partner /Contribution | National Aluminium Company- Rs.1,96,00,000.00  |
| <b>SSAG Remarks</b>            | <b>Approved with the following condition and share of the CSIR, KIIT , MOM and NALCO:</b>  |
|                                | <p><b>i.</b> Out of 392.16 lakh CSIR IMMT and KIIT share is in the ratio of Rs. 97.965 lakh : : Rs. 294.195 lakh as per budget details given in the proposal.</p> <p><b>ii.</b> NALCO's contribution is Rs.196 lakh which will go to KIIT.</p> |



|        | <p>iii. CSIR/ CSIR-IMMT will co-fund atleast Rs. 24.5 lakh i.e. 25% of the CSIR-IMMT's share of Rs. 97.965 lakhs in the project cost.</p> <p>iv. NALCO will onboard a Startup for this project within 6 months.</p> <p>v. <b>MOM will contribute Rs. 73.465 lakh to CSIR-IMMT and Rs. 98.195 lakh to KIIT (total Rs. 171.660 Lakh) with the following time line:</b></p> <p><b>CSIR-IMMT:</b></p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>3<sup>rd</sup> year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs. 21.345 lakh</td> <td>Rs. 26.06 lakh</td> <td>Rs. 26.06 lakh</td> <td>Rs. 73.465 lakh</td> </tr> </tbody> </table> <p><b>KIIT :</b></p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Item</th> <th>1<sup>st</sup> Year</th> <th>2<sup>nd</sup> Year</th> <th>3<sup>rd</sup> year</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Rs. 73.415 lakhs</td> <td>Rs. 12.39 lakh</td> <td>Rs. 12.39 lakh</td> <td>Rs. 98.195 lakh</td> </tr> </tbody> </table> | Item                 | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | 3 <sup>rd</sup> year | Total | Amount | Rs. 21.345 lakh | Rs. 26.06 lakh | Rs. 26.06 lakh | Rs. 73.465 lakh | Item | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | 3 <sup>rd</sup> year | Total | Amount | Rs. 73.415 lakhs | Rs. 12.39 lakh | Rs. 12.39 lakh | Rs. 98.195 lakh |
|--------|---|----------------------|----------------------|----------------------|----------------------|-------|--------|-----------------|----------------|----------------|-----------------|------|----------------------|----------------------|----------------------|-------|--------|------------------|----------------|----------------|-----------------|
| Item   | 1 <sup>st</sup> Year  | 2 <sup>nd</sup> Year | 3 <sup>rd</sup> year | Total                |                      |       |        |                 |                |                |                 |      |                      |                      |                      |       |        |                  |                |                |                 |
| Amount | Rs. 21.345 lakh   | Rs. 26.06 lakh       | Rs. 26.06 lakh       | Rs. 73.465 lakh      |                      |       |        |                 |                |                |                 |      |                      |                      |                      |       |        |                  |                |                |                 |
| Item   | 1 <sup>st</sup> Year  | 2 <sup>nd</sup> Year | 3 <sup>rd</sup> year | Total                |                      |       |        |                 |                |                |                 |      |                      |                      |                      |       |        |                  |                |                |                 |
| Amount | Rs. 73.415 lakhs  | Rs. 12.39 lakh       | Rs. 12.39 lakh       | Rs. 98.195 lakh      |                      |       |        |                 |                |                |                 |      |                      |                      |                      |       |        |                  |                |                |                 |

15. Following **Project No. SNTMOM/1020/2023** was considered by the SSAG but was not approved as the PI could not get and submit the letter of support from the industry partner:

|                                |   |
|--------------------------------|---|
| Project Title                  | Dry Beneficiation Studies on a low-grade Wollastonite by indigenously designed and newly developed Shape Separator for its commercial application |
| Institution                    | CSIR Institute of Minerals and Materials Technology   |
| Principal Investigator         | Santosh Deb Barma<br><br>(0859695813<br>sdbarma@immt.res.in)  |
| Project Cost & Duration        | Rs. 61,88,500.00<br>(Rs.51,88,500.00 (MoM) + Rs.10,00,000.00 Industry Partner)<br><br>2 Years   |
| Industry Partner /Contribution | Rs. 10,00,000.00  |
| SSAG Remarks                   | <b>Not Approved</b><br>-PI was not able to find industry partner.   |

**4. Agenda Item No. 2 – 1-2 page write ups of the completed projects of 55th SSAG:**

While reviewing the one page write ups and way forward submitted by the PIs of 17 completed projects following decisions were taken :

i. The Chairman directed that Ministry of Mines shall carry out the audit of projects completed during last 5 years under the Science and Technology Programme of Ministry of Mines with reference to commercialization of the developed technologies, whether the research benefitted the stakeholders, what actions were taken to disseminate the research, etc.

**ii.** Ministry of Mines shall also organize a virtual seminar wherein the beneficiary Institutes under the Science and Technology Programme of Ministry of Mines will present their research work of all the projects completed during last 5 years under the said Programme to industry, start-ups and other stakeholders.

**iii.** As decided during the last SSAG meeting, the Chairman reiterated that all completed projects shall be reviewed by the Director of the grantee research institution concerned for exploring the possibility of the commercialisation of the projects. The Ministry of Mines shall follow up with the grantee research institution on regular basis and monitor.

**iv.** JNARDDC and NFTDC will review the ongoing projects on quarterly basis and submit a progress report to the PERC in its next meeting for extensive review of the ongoing projects.

**v.** SATYABHAMA Portal will be opened in 3-4 tranches in a year for inviting R&D projects regularly.

**vi.** SATYABHAMA Portal would be modified to allow PIs for uploading of PPT of their projects which will be shared along with the agenda at least 15 days in advance to the PERC members for effective evaluation for recommending it to SSAG.

**5. Agenda Item No. 3 – Revision in Guidelines based on recommendation of PERC:**

**i.** During the discussion, it was felt that in case of CSIR projects, contribution of CSIR is needed for better monitoring and outcome of the projects submitted by the CSIR labs and hence this recommendation of 23<sup>rd</sup> PERC was not approved by the SSAG.

**6. Agenda Item No. 4 – Any other matter with kind permission of the Chair**

**i.** The matter regarding Intellectual Property and copyrights was discussed by the members of SSAG in view of the mandatory Industry participation in the projects. It was decided that terms of sharing of Intellectual Property and copyrights will be mutually decided by the Institutes and Industry Partners themselves. However, in case of any dispute, they may approach Ministry of Mines.

**ii.** Director (Technical) informed about the Canada's Critical Mineral Strategy wherein a portion of the R&D budget is allotted to carrying out below TRL-3 research without industry participation. He emphasized that Ministry of Mines may also bring similar provision under its guidelines. The SSAG recommended that not more than 10% of the total budget of the Science and Technology Programme of Ministry of Mines should be utilized towards this provision subject to ceiling of Rs. 10 lakh per Institute. Further, the SSAG also recommended that this provision should not be allowed for CSIR Labs and Autonomous Research Institutes under various Ministries of Government of India and State Governments. Accordingly, the guidelines may be revised to the above extent.

**7.** The SSAG meeting concluded with a vote of thanks to the chair, members and the experts.

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## ANNEXURE-A

**LIST OF PARTICIPANTS OF 56<sup>th</sup> SSAG MEETING HELD ON 18<sup>th</sup> Dec 2023**

| S.N. | Name                   | Designation                         |
|------|------------------------|-------------------------------------|
| 1.   | Shri V. L. Kantha Rao  | Secretary (Mines) / Chairman, SSAG  |
| 2.   | Mrs. Farida M. Naik    | Joint Secretary (Mines)             |
| 3.   | Ms. Nirupama Kotru     | JS & FA (Mines)                     |
| 4.   | Shri Pradeep Singh     | Director (Tech.), Ministry of Mines |
| 5.   | Shri R. P. Gupta       | Director, Ministry of Mines         |
| 6.   | Shri Janardan Prasad   | Director General, GSI               |
| 7.   | Dr. Manoranjan Mohanty | Head (AI), DST                      |
| 8.   | Dr. J K Pandey         | CSIR-CIMFR                          |
| 9.   | Dr. D P Mondal,        | Chief Scientist CSIR-AMPRI          |
| 10.  | Dr. AnupamAgnihotri    | Director, JNARDDC                   |
| 11.  | Dr. H.S. Venkatesh     | Director, NIRM                      |
| 12.  | Dr. K. Balasubramanian | Director, NFTDC                     |
| 13.  | Shri Indra Dev Narayan | CMD, MECL                           |
| 14.  | Shri Ghanshyam Sharma  | CMD, HCL, Kolkata                   |
| 15.  | Ms. Binuta Patra       | NALCO, Bhubaneswar                  |
| 16.  | Prof. Sagar Pal        | Dean (R&D) IIT – ISM, Dhanbad       |