

**Information on Patents of CSIR-CIMFR for the period 1st April 2022 to 31st March 2023 Patents Filed in India: 14, Filed in Abroad: 02**

**i) Patent Filed in India: 14**

| SNo | NFNO          | Country | Lab   | Title                                                                                         | Inventors                                                                                                                      | Prov. Filing Date | Comp. Filing Date | Application No. | Status | Grant Date | Patent No. |
|-----|---------------|---------|-------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-----------------|--------|------------|------------|
| 1   | 0231NF2021/IN | IN      | CIMFR | EFFICIENT VOLUMETRIC HIGH PRESSURE ADSORPTION ISOTHERM EXPERIMENTAL SET UP                    | DEBADUTTA MOHANTY, SUJOY CHATTARAJ                                                                                             | 12/Apr/2022       | ---               | 202211022001    | PP     | ---        | ---        |
| 2   | 0030NF2021/IN | IN      | CIMFR | SLOPE STABILIZATION AND MONITORING TECHNIQUE USING GEO-SYNTHETIC CONCRETE MAT AND IoT DEVICES | CHAULYA SWADES KUMAR, ROY SANJAY KUMAR, RANA ADITYA, SINGH PRADEEP KUMAR, SAURABH KUNAL, KABRA PRASHANT, KABRA VINITA PRASHANT | 17/May/2022       | ---               | 202211028451    | PP     | ---        | ---        |
| 3   | 0076NF2022/IN | IN      | CIMFR | SOLAR-BASED MULTIPURPOSE UTILITY SYSTEM                                                       | SWADES KUMAR CHAULYA, GIRENDRA MOHAN PRASAD, SUJIT KUMAR MANDAL, GAUTAM BANERJEE, SURAJIT DEY, VIRENDRA KUMAR, NARESH          | ---               | 27/May/2022       | 202211030751    | PP     | ---        | ---        |

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|   |               |    |       |                                                                                                                                | KUMAR, PREITY, VIJAY<br>KUMAR RAWANI,<br>GOPALJEE SAW                                                                 |     |             |              |    |     |     |
| 4 | 0183NF2021/IN | IN | CIMFR | A MULTIFUNCTIONAL<br>FLOATATION REAGENT<br>AND A PROCESS FOR<br>THE PREPARATION<br>THEREOF FROM<br>WASTE COAL TAR              | SANJAY CHAUDHURI,<br>SUJAN SAHA,<br>THONANGI GOURI<br>CHARAN, PRADEEP<br>KUMAR SINGH                                  | --- | 24/Jun/2022 | 202211038301 | PP | --- | --- |
| 5 | 0095NF2022/IN | IN | CIMFR | A PROCESS FOR THE<br>SYNTHESIS OF<br>FLUORESCENT SILICA<br>NANOPARTICLES<br>FROM FLY ASH                                       | VIKRAM SINGH,<br>HRIDESH AGARWALLA,<br>REGINALD EBHIN<br>MASTO, MANISH<br>KUMAR                                       | --- | 08/Jul/2022 | 202211039599 | PP | --- | --- |
| 6 | 0156NF2022/IN | IN | CIMFR | BIOPOLYMER BLENDED<br>BIMETALLIC-OXIDE<br>NANOPARTICLES-<br>BASED COMPOSITE<br>MEMBRANES FOR GAS<br>SEPARATION<br>APPLICATIONS | M. S. SANTOSH, K R<br>Balaji, V. G.<br>Dileepkumar, Manish<br>Kumar, Ashis Mukherjee                                  | --- | 02/Sep/2022 | 202211050458 | PP | --- | --- |
| 7 | 0119NF2022/IN | IN | CIMFR | PREPARATION OF<br>CATALYST AND<br>EFFICIENT SYNTHESIS<br>OF NICOTINAMIDE<br>THEREFROM                                          | HRIDESH AGARWALLA,<br>MONALISA<br>GANGOPADHYAY, RABI<br>NARAYAN SENAPATI,<br>ASHIS KUMAR ADAK,<br>GAJANAN SAHU, ASHIS | --- | 06/Sep/2022 | 202211050957 | PP | --- | --- |

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|    |               |    |       |                                                                                                                                                        | MUKHERJEE, PRADEEP<br>KUMAR SINGH                                                                                                                                                                  |     |             |              |    |     |     |
| 8  | 0100NF2020/IN | IN | CIMFR | CONTACTLESS AUTO<br>UV DISINFECT UNIT<br>FOR TOUCH-SCREENS,<br>THUMB OR FINGER<br>SCANNERS AND<br>KEYPADS OF<br>BIOMETRIC<br>IDENTIFICATION<br>DEVICES | RAJENDRA KUMAR<br>VISHWAKARMA, LALIT<br>KUMAR SAHOO,<br>PARTHO BISWAPATI<br>CHOUDHURY,<br>DEVENDRA KUMAR<br>SAKHRE, SEEMA<br>ASHISHAN TOPNO,<br>RAJESH LAXMANRAO<br>KATLEY, PRADEEP<br>KUMAR SINGH | --- | 04/Nov/2022 | 202211063796 | PP | --- | --- |
| 9  | 0029NF2021/IN | IN | CIMFR | Purge and pressurized<br>(Ex p) protected<br>variable speed drives<br>(VSDs) suitable for use<br>in Hazardous Areas                                    | AHIRWAL BHAGIRATH,<br>BANERJEE GAUTAM                                                                                                                                                              | --- | 10/Nov/2022 | 202211064424 | PP | --- | --- |
| 10 | 0033NF2021/IN | IN | CIMFR | Method for excavation<br>of slot raise and rings<br>simultaneously in<br>underground stope<br>using drilling and<br>blasting                           | MURARI PRASAD ROY,<br>VIVEK KUMAR<br>HIMANSHU, RANJIT<br>KUMAR PASWAN, SURAJ<br>KUMAR, CHHANGTE<br>SAWMLIANA, PRADEEP<br>KUMAR SINGH                                                               | --- | 28/Nov/2022 | 202211063797 | PP | --- | --- |
| 11 | 0167NF2022/IN | IN | CIMFR | Metallic Barrier<br>coatings on the surface                                                                                                            | M. S. Santosh, V. G.<br>Dileepkumar, K. R.                                                                                                                                                         | --- | 12/Dec/2022 | 202211071772 | PP | --- | --- |

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|    |               |    |       | of additive<br>manufactured<br>composite pressure<br>vessel liners and the<br>process thereof                       | Balaji, Manish Kumar                                                                                                                             |             |             |              |    |     |     |
| 12 | 0065NF2022/IN | IN | CIMFR | A NOVEL TOILET<br>SYSTEM USEFUL FOR<br>FLOOD PRONE AREAS                                                            | Sudhir Kumar Kashyap,<br>Reeya Das, Snigdha,<br>Akanchha, Lalan Kumar,<br>Gautam Banerjee,<br>Jhuma Dutta, Shweta<br>Gupta                       | ---         | 03/Jan/2023 | 202311000299 | PP | --- | --- |
| 13 | 0165NF2022/IN | IN | CIMFR | BIO-COMPOSITES<br>COMPRISING COAL<br>AND AGRICULTURAL<br>BIOMASS AND A<br>PROCESS FOR THE<br>PREPARATION<br>THEREOF | Mysore Sridhar Santosh,<br>Periyasamy Gopinathan,<br>Vishalakshi Gurumurthy<br>Dileepkumar, Khandya<br>Rushyshringeshwar<br>Balaji, Manish Kumar | 02/Mar/2023 | ---         | 202311014135 | PP | --- | --- |
| 14 | 0205NF2022/IN | IN | CIMFR | AERO-HYDRO JIG FOR<br>HIGH ASH COALS<br>BENEFICIATION<br>PROCESS                                                    | SUBHASH CHANDRA<br>MAJI, SUJIT KUMAR<br>KABIRAJ, MANISH<br>KUMAR, UDAY SANKAR<br>CHATTOPADHYAY                                                   | 28/Mar/2023 | ---         | 202311022580 | PP | --- | --- |

ii) Patent Filed in Abroad: 2

| No | NFNO          | Country                 | Lab   | Title                                                                                     | Inventors                                                                                                                         | Prov. Filing Date | Comp. Filing Date | Application No.   | Status | Grant Date | Patent No. |
|----|---------------|-------------------------|-------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|--------|------------|------------|
| 1  | 0139NF2020/WO | WO<br>(PCT Application) | CIMFR | A THERMOGRAVIMETRIC REACTOR (TGR) TO STUDY WEIGHT CHANGES OF SOLIDS AND A PROCESS THEREOF | Prakash Dhondiram Chavan, Sujan Saha, Gajanan Sahu, Sudipta Datta, Vishal Chauhan, Nilesh Dhananjay Dhaigude, Pradeep Kumar Singh | ---               | 06/May/2022       | PCT/IN2022/050446 | PP     | ---        | ---        |
| 2  | 0090NF2021/WO | WO<br>(PCT Application) | CIMFR | Development of Oxygen Enriched Air Blown Pressurized Fluidized Bed Pilot Scale Gasifier   | PRAKASH DHONDIRAM CHAVAN, SUJAN SAHA, NILESH D DHAIGUDE, VISHAL CHAUHAN, GAJANAN SAHU, SUDIPTA DATTA, PRADEEP KUMAR SINGH         | ---               | 07/Feb/2023       | PCT/IN2023/050124 | PP     | ---        | ---        |

iii) Granted in India: 5

| No | NFNO          | Country | Lab   | Title                                                                                                                                                                 | Inventors                                                                                                                                                                                  | Prov. Filing Date | Comp. Filing Date | Application No. | Status  | Grant Date  | Patent No. |
|----|---------------|---------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-----------------|---------|-------------|------------|
| 1  | 0196NF2017/IN | IN      | CIMFR | AN INTELLIGENT DUST SUPPRESSION SYSTEM FOR INDUSTRIAL APPLICATIONS                                                                                                    | Chaulya Swades Kumar, Singh Tej Bahadur, Banerjee Gautam, Singh Pradeep Kumar, Naresh Kumar, Virendra Kumar, Singh Jitendra Kumar, Ghosh Tanmoya Nema, Mandal Ranjeet, Chatterjee Debashis | ---               | 16/Apr/2018       | 201811014398    | IF/2024 | 27/Jun/2022 | 400048     |
| 2  | 0177NF2017/IN | IN      | CIMFR | PRESSURIZED FLUIDIZED BED GASIFICATION PILOT SCALE TEST FACILITY WITH THE PROVISION OF EXTERNAL HEATING TO TEST THE HIGH ASH COALS, BIOMASS, REJECTS AND THEIR BLENDS | CHAVAN PRAKASH DHONDIRAM, DATTA SUDIPTA, SAHA SUJAN, SAHU GAJANAN, DUTTA PASHUPATI, SINGH PRADEEP KUMAR                                                                                    | 13/Apr/2018       | 12/Apr/2019       | 201811014119    | IF/2024 | 26/Sep/2022 | 407551     |

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| 3 | 0106NF2015/IN | IN | CIMFR | Mine transport surveillance system                                                                                                              | Swades Kumar<br>Chaulya, Girendra<br>Mohan Prasad                                                                                                                        | ---         | 13/Jul/2015 | 2107DEL2015  | IF/2024 | 04/Jan/2023 | 416707 |
| 4 | 0197NF2016/IN | IN | CIMFR | A PROCESS FOR THE PREPARATION OF SLOW RELEASE POTASSIUM FERTILIZER FROM COMBUSTION WASTES OF BIOMASS BASED POWER PLANTS                         | MASTO REGINALD<br>EBHIN, RAM LAL<br>CHAND, DUTTA<br>PASHUPATI, THAKUR<br>SANJAY KUMAR,<br>GEORGE JOSHY, DAS<br>TARIT BARAN,<br>MUKHERJEE ASHIS,<br>ANGUSELVI<br>VETRIVEL | ---         | 01/Dec/2016 | 201611041058 | IF/2024 | 12/Jan/2023 | 417820 |
| 5 | 0067NF2010/IN | IN | CIMFR | PURGING OR VENTILATION SYSTEM AND CONTROL UNIT OR APPARATUS FOR INCREASED SAFETY AND NON-SPARKING MOTORS FOR EXPLOSIVE GAS AND DUST ATMOSPHERES | VISHWAKARMA<br>RAJENDRA KUMAR,<br>SINGH ARVIND<br>KUMAR, AHIRWAL<br>BHAGIRATH                                                                                            | 29/Mar/2011 | 29/Mar/2012 | 0865DEL2011  | IF/2024 | 09/Feb/2023 | 421070 |

iv) Granted in Abroad: NIL