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Indian Institute of Science Education and Research Pune

About IISER Pune

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Research at IISER Pune is carried out at the departments of Biology, Chemistry, Data Science, Earth and Climate Science, Humanities and Social Sciences, Mathematics, Physics and Science Education. Interdisciplinary research at the interface of one or more disciplines are also being actively pursued. This document provides a listing of patents applied / published / granted to IISER Pune members.

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Patents applied / published / granted to IISER Pune members

As of December 2023, IISER Pune has filed 85 patent applications, and had 65 published patents, and 37 granted patents (PCT applications and abandoned applications are not part of this list).

Inventors	Title	Country and Patent Info
1 Ottakam Thotiyl, Muhammed Musthafa; Thimmappa, Ravikumar	Fuel and power producing galvanic cell	India Application No.: 2898/MUM/2015 Publication No.: IN201502692I3 Granted No.: 466251
2 Jha, Plawan Kumar; Ballav, Nirmalya	A process for wet-chemical reduction of graphene oxide (GO) to reduced graphene oxide (rGO) for ultrahigh performance supercapacitor and energy storage applications	India Application No.: 201621023063 Publication No.: IN201621023063A Granted No.: 421476
3 Halder, Sattwick; Roy, Kingshuk; Nandi, Shyamapada; Vaidhyanathan, Ramanathan	Self-exfoliated triazole-triformyl phloroglucinol based covalent organic nanosheets for high and reversible lithium ion storage	Korea Application No.: 10-2019-7037190 Publication No.: 10-2020-0015566 Granted No.: 10-2553208
4 Halder, Sattwick; Roy, Kingshuk; Nandi, Shyamapada; Vaidhyanathan, Ramanathan	Self-exfoliated triazole-triformyl phloroglucinol based covalent organic nanosheets for high and reversible lithium ion storage	Japan Application No.: 2020-516978 Publication No.: 2020525636A Granted No.: 7241743
5 Britto, Sandanaraj Selvaraj; Bhandari, Pavankumar Janardhan; Reddy, Mullapudi Mohan	Supramolecular protein assemblies with advanced functions and synthesis thereof	India Application No.: 201721034557 Publication No.: IN201721034557A Granted No.: 490760
6 Britto, Sandanaraj Selvaraj; Bhandari, Pavankumar Janardhan; Reddy, Mullapudi Mohan	Generation-dependent supramolecular assemblies of protein-dendron conjugates	India Application No.: 201721044279 Publication No.: IN201721044279A Granted No.: 466848
7 Britto, Sandanaraj Selvaraj; Bhandari, Pavankumar Janardhan; Reddy, Mullapudi Mohan	Generation-dependent supramolecular assemblies of protein-dendron conjugates	U.S.A. Application No.: US16/771,124 Publication No.: US20210163916A1 Granted No.: US11807884 B2

Inventors		Title	Country and Patent Info
8	Puthusseri, Dhanya; Wahid, Malik; Basu, Aniruddha; Ogale, Satishchandra Balkrishna	Doped carbon nano-onion film as scaffold for stabilizing lithium metal anode	India Application No.: 201821007031 Publication No.: IN201821007031 A Granted No. 489111
9	Britto, Sandanaraj Selvaraj; Bathla, Punita	Process for determining enzyme activity in a cell by Activity-Based Reporter Gene Technology (ABRGT)	U.S.A. Application No.: US16401906 Publication No.: US20190338373A1 Granted No.: 11834698
10	David J. Hannapel; Anjan K. Banerjee	Nucleic acid constructs, plants with increased tuber yield, and methods for increasing tuber yield in a plant	U.S.A. Application No.: US16/246321 Publication No.: US20190218565A1 Granted No.: US11795468
11	Jose, Gregor; Pucadyil, Thomas	A novel bifunctional lipid probe for proximity labelling-based identification of membrane-associated proteins	India Application No.: 201921022074 Publication No.: IN201921022074 A Granted No.: 459831
12	Vaidhyanathan, Ramanathan	Covalent organic framework derived lightweight nanomagnets and a chemical method thereof	India Application No.: 202021004764 Publication No.: IN202021004764A Granted No.: 447206
13	Haldar, Sattwick; Vaidhyanathan, Ramanathan	Method of tuning the electronic energy level of covalent organic framework for crafting high-rate Na-ion battery anode	India Application No.: 202021013731 Publication No.: IN202021013731A Granted No.: 440727
14	Kushwaha Rinku; Vaidhyanathan, Ramanathan	Method of enhancing the supercapacitance of covalent organic framework via use of redox active additives in electrolyte	India Application No.: 202021021759 Publication No.: IN202021021759 A Granted No.: 463530
15	Abraham, Nixon Mundathukudiyil	Olfactory-action meter for precise quantification of olfactory deficits	India Application No.: 202021035482 Publication No.: IN202021035482A Granted No.: 432345
16	Abraham, Nixon Mundathukudiyil	Olfactory-action meter for precise quantification of olfactory dysfunctions and neurocognitive deficits	U.S.A. Application No.: US17/443,527 Publication No.: US20220054075A1 Granted No.: US 11786164B2
17	Kikkeri, Raghavendra; Kumar, N. Vijendra; Shanthamurthy, Chethan D.; Jain, Prashant; Raigawali, Rakesh; Vered Padler-Karavani; Leviatan Ben-Arye Shani	Heparan sulfate compounds as chemokine inhibitors	India Application No.: 202121003052 Publication No.: IN202121003052A Granted No.: 423269
18	Britto, Sandanaraj Selvaraj; Bathla, Punita, Abhijit De	Assay for determining target engagement in real time	India Application No.: 202121011849 Publication No.: IN202121011849A Granted No.: 421037
19	Rapol, Umakant D.; Hotha, Srinivas; Nair, Sunil; Patel, Kushal H.; Dutta, Pranab; Maurya, S. Sagar; Biswas, Korak; Das, Pratim Kumar	Chemical oxygen generator	India Application No.: 202121020842 Publication No.: IN202121020842A Granted No. 417410
20	Gokul M.A.; Atikur Rahman	Process for synthesis of monolayer transition metal dichalcogenide	India Application No.: 202221005450 Publication No.: IN202221005450 A Granted No.: 463578
21	Gnanaprakasam, Boopathy; Pandey, Akanksha M.; Mondal, Shankhajit	A continuous flow process for synthesis of organic azides	India Application No.: 202221031963 Publication No.: IN202221031963A Granted No.: 440209

	Inventors	Title	Country and Patent Info
22	Ramanathan, Vaidhyanathan; Nandi, Shyamapada	Ultra-microporous metal organic frameworks based on isonicotinate and its derivatives for CO ₂ separation applications	India Application No.: 2381/MUM/2014 Publication No.: IN391487B Granted No.: 391487
23	Ramanathan, Vaidhyanathan; Mullangi, Dinesh; Nandi, Shyamapada	Covalent organic frameworks as porous supports for non-noble metal based water splitting electrocatalysts	India Application No.: 4301/MUM/2015 Publication No.: IN201504301I3 Granted No.: 394736
24	Halder, Sattwick; Roy, Kingshuk; Nandi, Shyamapada; Vaidhyanathan, Ramanathan	Self-exfoliated triazole-triformyl phloroglucinol based covalent organic nanosheets for high and reversible lithium ion storage	India Application No.: 201721019419 Publication No.: IN392721B Granted No.: 392721
25	Halder, Sattwick; Chakraborty, Debanjan; Vaidhyanathan, Ramanathan	Covalent organic framework as flexible white light emitter	India Application No.: 201821028796 Publication No.: IN412657B Granted No.: 412657
26	Hotha, Srinivas; Neralkar, Mahesh; Hotha, Sanjeev	Insect repellent	India Application No.: 201921017887 Publication No.: IN410917B Granted No.: 410917
27	Hotha, Srinivas; Sutar, Yogesh; Walke, Gulab; Kasdekar, Niteshlal	Silver assisted gold catalysis for the preparation of fondaparinux pentasaccharide and intermediates	India Application No.: 202021050409 Publication No.: IN413595B Granted No.: 413595
28	Tanpure, Arun Ankush; Sawant, Anupam Ashok; Galande, Sanjeev Anant; Srivatsan, Seergazhi Gopalan	Novel azide-modified UTP analogs for posttranscriptional chemical functionalization and imaging of RNA	India Application No.: 1555/MUM/2015 Publication No.: IN356910B Granted No.: IN356910
29	Mullangi, Dinesh; Sorout, Shalini; Ramanathan, Vaidhyanathan	PD loaded amphiphilic covalent organic framework as catalyst for multi-fold heck reactions, aqueous phase C-C couplings and CO oxidation	India Application No.: 2692/MUM/2015 Publication No.: IN201502692I3 Granted No.: 381211
30	Ottakam Thotiyil, Muhammed Musthafa; Thimmappa, Ravikumar; Devendrachari, Mruthyunjayachari Chattanahalli; Aralekallu, Shambhulinga	Chemically chargeable photo battery	India Application No.: 201621010024 Publication No.: IN201621010024A Granted No.: 368081
31	Halder, Sattwick; Roy, Kingshuk; Nandi, Shyamapada; Vaidhyanathan, Ramanathan	Self-exfoliated triazole-triformyl phloroglucinol based covalent organic nanosheets for high and reversible lithium ion storage	U.S.A. Application No.: 16/700,481 Publication No.: 10,981,925B2 Granted No.: 10,981,925
32	Britto, Sandanaraj Selvaraj; Bhandari, Pavankumar Janardhan; Reddy, Mullapudi Mohan	Supramolecular protein assemblies with advanced functions and synthesis thereof	U.S.A. Application No.: 16/146,891 Publication No.: US20190134212A1 Granted No.: US 11173212B2
33	Chakrapani, Harinath; Malwal, Satish Ramesh	Thiol mediated/activated prodrugs of sulfur dioxide (SO ₂) having anti-bacterial activity	U.S.A. Application No.: 13/690,842 Publication No.: US-2014-0121211-A1 Granted No.: 9,079,870
34	Bhat, Ramakrishna Gopalkrishna; Mohite, Amar Ramchandra	Synthesis of α , β -unsaturated carboxylic acids and esters	India Application No.: 2437/MUM/2013 Publication No.: IN328495B Granted No.: 328495

	Inventors	Title	Country and Patent Info
35	Ramanathan, Vaidhyanathan; Mullangi, Dinesh; Nandi, Shyamapada	Covalent organic frameworks as porous supports for non-noble metal- based water splitting electrocatalysts	U.S.A. Application No.: 15/348,670; Publication No.: US-2017-0130349-A1 Granted No.: 10,301,727
36	Britto, Sandanaraj Selvaraj; Reddy, Mullapudi Mohan; Bhandari, Pavankumar Janardhan; Rao, Kasuladevu Jagannadha	Hydrophobin mimics: Process for preparation thereof	India Application No.: 201621005378 Publication No.: IN201621005378A Granted No.: IN337949
37	Britto, Sandanaraj Selvaraj; Reddy, Mullapudi Mohan; Bhandari, Pavankumar Janardhan; Rao, Kasuladevu Jagannadha	Hydrophobin mimics: Process for preparation thereof	U.S.A. Application No.: 15/435,055 Publication No.: US 2017-0231260 A1 Granted No.: 10,188,136
38	Sonde, Ramakrishna Ramnath; Bhatia, Divesh; Roy, Shantanu; Pant, Kamal Kishor; Hotha, Srinivas; Rapol, Umakant; Nair, Sunil; Mhatre, Dwijra; Singh, Kuldeep; Parmar, Kaushal; Singh, Shreya; Patel, Kushal; Dutta, Pranab; Maurya, Shivasagar; Biswas, Korak; Das, Pratim Kumar	Hybrid oxygen system using passive and active systems	India Application No.: 202111029508 Publication No.: IN202111029508A
39	Wable, Minal; Furquan, Mohammad; Banerjee, Abhik; Ogale, Satishchandra	Process for graphene-like carbon coating on substrates	India Application No.: 202121059467 Publication No.: IN202121059467A
40	Wable, Minal; Furquan, Mohammad; Banerjee, Abhik; Ogale, Satishchandra	Microgradient patterned carbon coated current collector for alkali metal battery and method of preparation thereof	India Application No.: 202221006134 Publication No.: IN202221006134A
41	Jakhar, Navita; Singh, Surjeet	Method for making high figure-of- merit nanostructured thermoelectric materials	India Application No.: 202221018408 Publication No.: IN202221018408A
42	De, Avirup; Prabhakaran, Dharmalingam; Nair, Sunil	Device and method for measuring topologically protected surface magnon	India Application No.: 202221043561 Publication No.: IN202221043561A
43	Haldar, Sattwick; Vaidhyanathan, Ramanathan	Method of tuning the electronic energy level of covalent organic framework for crafting high-rate Na- ion battery anode	U.S.A. Application No.: US17/914,925 Publication No.: US20230123529A1
44	Haldar, Sattwick; Vaidhyanathan, Ramanathan	Method of tuning the electronic energy level of covalent organic framework for crafting high-rate Na- ion battery anode	Japan Application No.: JP2022-558106 Publication No.:
45	Wable, Minal; Furquan, Mohammad; Banerjee, Abhik; Ogale, Satishchandra	Process for graphene-like carbon coating on substrates	U.S.A. Application No.: US18/085,540 Publication No.: US2023-0193469A1
46	Hotha, Srinivas; Sutar, Yogesh; Walke, Gulab; Kasdekar, Niteshlal	Silver assisted gold catalysis for the preparation of fondaparinux pentasaccharide and intermediates	Australia Application No.: 2021381706 Publication No.: 2021381706
47	Hotha, Srinivas; Sutar, Yogesh; Walke, Gulab; Kasdekar, Niteshlal	Silver assisted gold catalysis for the preparation of fondaparinux pentasaccharide and intermediates	Europe Application No.: 21894152.4 Publication No.: EP4247826
48	Galande, Sanjeev; Naik, Rutika	Combined expression pattern of SATB family chromatin organizers as improved biomarker tool for cancer prognosis	Japan Application No.: Japan (2021-530331) Publication No.: JP2022502072

Inventors		Title	Country and Patent Info
49	Datta, Shouvik; Bhunia, Amit; Singh, Mohit Kumar; Mohamed, Henini; and Maryam Al Huwayz	Excitonic bose-einstein condensate (bec) as qubits using semiconductor nanostructures for quantum technologies	India Application No.: 202121025498 Publication No.: IN202121025498A
50	Britto, Sandanaraj Selvaraj; Bathla, Punita; Abhijit De	Assay for determining target engagement in real time in living system	U.S.A. Application No.: US (17/698,397) Publication No.: US20220298541A1
51	Haldar, Sattwick; Vaidhyanathan, Ramanathan	Method of tuning the electronic energy level of covalent organic framework for crafting high-rate Na-ion battery anode	Singapore Application No.: (SG)11202253550X Publication No.: SG11202253550A1
52	Haldar, Sattwick; Vaidhyanathan, Ramanathan	Method of tuning the electronic energy level of covalent organic framework for crafting high-rate Na-ion battery anode	China Application No.: (CN)202180025586.5 Publication No.: CN115348985A
53	Haldar, Sattwick; Vaidhyanathan, Ramanathan	Method of tuning the electronic energy level of covalent organic framework for crafting high-rate Na-ion battery anode	Korea Application No.: KR 2022-7037905 Publication No.: 1020227037905
54	Galande, Sanjeev; Naik, Rutika	Combined expression pattern of SATB family chromatin organizers as improved biomarker tool for cancer prognosis	U.S.A. Application No.: 17/266,206 Publication No.: US20210262041A1
55	Galande, Sanjeev; Naik, Rutika	Combined expression pattern of SATB family chromatin organizers as improved biomarker tool for cancer prognosis	Europe Application No.: 19847807.5 Publication No.: EP3833779A1
56	Galande, Sanjeev; Naik, Rutika	Combined expression pattern of SATB family chromatin organizers as improved biomarker tool for cancer prognosis	China Application No.: 201980066379.7 Publication No.: CN112912517A
57	Hotha, Srinivas; Boddu, Vyankteswararao; Kumbhare, Sagar; Shah, Nisarg	Software Assisted Direct Extraction and Sampling Interface (SWADESI)	India Application No.: 562/MUM/2015 Publication No.: IN201500562I3
58	Ottakam Thotiyil, Musthafa; Thimmappa, Ravikumar; Devendrachari, Mruthyunjayachari Chattanahalli; Kottaichamy, Alagar Raja; Shafi, Shahid Pottachola	Precious metal free aqueous zinc battery with a freely diffusing electron acceptor	India Application No.: 201721000903 Publication No.: IN201721000903A
59	Britto, Sandanaraj Selvaraj; Bathla, Punita	Imaging of enzyme activity with exquisite specificity using Activity based Reporter Gene Technology (AbRGT)	India Application No.: 201821016607 Publication No.: IN201821016607A
60	Britto, Sandanaraj Selvaraj; Reddy, Mullapudi Mohan	Chemical method for synthesis of protein amphiphiles	India Application No.: 201821023023 Publication No.: IN201821023023A
61	Britto, Sandanaraj Selvaraj; Reddy, Mullapudi Mohan	Chemical method for synthesis of protein amphiphiles	U.S.A. Application No.: 16/723,280 Publication No.: US20200199175A1
62	Galande, Sanjeev; Naik, Rutika	Combined expression pattern of SATB family chromatin organizers as improved biomarker tool for cancer prognosis	India Application No.: 201821029791 Publication No.: 201821029791A

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63	Pandit, S.B. Ravi; Kshatriya, Tejas; Kelkar, Sarika; Suryawanshi, Anil; Gawli, Yogesh; Ogale, Satishchandra; Puthusseri, Dhanya	A high-power density sodium-ion battery	India Application No.: 201921007799 Publication No.: IN201921007799A
64	Ballav, Nirmalya; Prasoon, Anupam	Thin film metal-organic diodes with high electrical rectification ratio	India Application No.: 201921020782 Publication No.: IN201921020782A
65	Jose, Gregor; Pucadyil, Thomas	A novel bifunctional lipid probe for proximity labelling-based identification of membrane-associated proteins	U.S.A. Application No.: 16/891373 Publication No.: US20200386764A1
66	Kumar, Nikhil; Banerjee, Abhik; Ogale, Satishchandra	Separator assembly for anode-free metal battery	India Application No.: 202331004828
67	Wable, Minal; Furquan, Mohammad; Banerjee, Abhik; Ogale, Satishchandra	Microgradient patterned carbon coated current collector for alkali metal battery and method of preparation thereof	U.S.A. Application No.: US18/164,750
68	Jakhar, Navita; Singh, Surjeet	Method for making high figure-of-merit nanostructured thermoelectric materials	U.S.A. Application No.: US18/127941
69	S.B. Ogale; Mohammad Furquan; Abhik Banerjee	Silicon and graphite direct writing and patterning electrode eco-friendly fabrication process for rechargeable batteries application	India Application No.: 202321051016
70	Kikkeri, Raghavendra; Kumar, N. Vijendra; Shanthamurthy, Chethan D.; Jain, Prashant; Raigawali, Rakesh; Vered Padler-Karavani; Leviatan Ben-Arye Shani	Heparan sulfate and its mimetics as chemokine inhibitors	U.S.A. Application No.: US18/262,463
71	Datta, Shouvik; Bhunia, Amit; Singh, Mohit Kumar; Mohamed Henini; Maryam Al huwayz	Excitonic Bose-Einstein Condensate (BEC) as qubits using semiconductor nanostructures for quantum technologies	U.S.A. Application No.: US18/258,691
72	Vaidhyanathan, Ramanathan; Singh, Himan Dev	A steam-stable three-dimensional (3D) zinc-adeninate metal organic framework with a high selectivity for industrial CO ₂ capture	India Application No.: 202321049364
73	Pramod Padmanabha Pillai; Radha Krishna Kashyap	Plasmonic solar thermoelectric generator	India Application No.: 202321058513
74	Jain, Chitvan; Ramanathan, Vaidhyanathan	Knitting the layers of two-dimensional covalent organic framework with one-dimensional polymer to make conducting quasi-three-dimensional architecture	India Application No.: 202321056536
75	Gokul M.A.; Atikur Rahman	A method for synthesis of metal halide perovskite (CsPbBr ₃) nano/microcrystals	India Application No.: 202321063998
76	Gnanaprakasam	Method of cross-etherification of at least one alkylated ether phenyl compound under continuous-flow condition	India Application No.: 202321089054
77	Sidharth Chopra; Harinath Chakrapani; Grace Kaul; Pooja Kumari	Heterocyclic iodonium compounds as broad-spectrum antibacterial agents	India Application No.: 202211005732

	Inventors	Title	Country and Patent Info
78	Vaidhyanathan, Ramanathan; Singh, Himan Dev	Three-dimensional (3d) hydrophobic amine-rich metal organic framework with a high selectivity for humid CO ₂ capture	India Application No.: 202221061108
79	Venkatnathan, Arun; Dev, Rabin Siva	Quantum mechanical model simulator	India Application No.: 202221064464
80	Chakrapani, Harinath; Kumar, T. Anand; Singh, Amit	Fluoroquinolone derivatives for treatment of active and latent tuberculosis	India Application No.: 202221069131
81	Ogale, Satishchandra Balkrishna; Furquan, Mohammad; Kumar, Nikhil; Bobade, Richa Amod; Varma, Karikath Sukumar	A process for coating integrative patterning and functionalization of glass, and uses thereof	India Application No.: 202221070801
82	Goel, Pranay; Phatak, Sanat	System and method to detect inflammatory arthritis of joint areas using artificial intelligence	India Application No.: 202221074344
83	Sudhakaran Prabhakaran	Treatment of diseases associated with variant novel open reading frames	U.S.A. Application No.: 63/123,454
84	Sudhakaran Prabhakaran	Treatment of cancer associated with dysregulated novel open reading frame products	U.S.A. Application No.: 63/126,309
85	Sudhakaran Prabhakaran	Treatment of cancer associated with variant novel open reading frames (incl inhibitors)	U.S.A. Application No.: 63/126,371

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