

## Science & Engineering Research Board

<b>ECRA Projects Sactioned in the Year 2019-20</b>				
<b>S.No</b>	<b>Discipline</b>	<b>Title</b>	<b>PI Details</b>	<b>Total Cost</b>
1.	Chemical Sciences	Engineering Biological Macromolecules For Light Harvesting	Ankur Gupta, Indian Institute of Science Education And Research Bhopal, Bhopal, Madhya Pradesh, 462023	2442000
2.	Engineering Sciences	Modeling And Analysis of Crash Risk & Performance of Motorbike Riders Under Influence of Human Behavioral Factors	Nagendra Rao Velaga, Indian Institute of Technology Bombay, Mumbai, Maharashtra, 400076	4965400
3.	Engineering Sciences	Condition Monitoring And Diagnostics of Induction Motors Using Hybrid Schemes.	Jeevanand S, Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, 247667	3931400
4.	Engineering Sciences	Design And Development of RF Front-End (RFFE) Passive Components For Indian Fifth Generation (5G) Cellular Mobile Network Applications From Microwave To Millimeterwave	Sukomal Dey, Indian Institute of Technology Palakkad, Palakkad, Kerala, 678557	4211530
5.	Engineering Sciences	Textured Lead Free Na <sub>0.5</sub> Bi <sub>0.5</sub> TiO <sub>3</sub> Based Multi-Layer Piezoelectric Actuators	Karthik T, Centre For Materials For Electronics Technology Thrissur, Thrissur, Kerala, 580011	4974220
6.	Engineering Sciences	Integrating Wastewater Treatment To Groundwater Softening And Defluoridation Using Microbial Desalination Cell	Praveena Gangadharan, Indian Institute of Technology Palakkad, Palakkad, Kerala, 678557	3519480
7.	Engineering Sciences	Fabrication Method of Photonic Crystals For Three-Dimensional Manipulation of Photons	Kapil Debnath, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, 721302	4482750
8.	Engineering Sciences	Novel Design of Photoanode For Flexible Dye Sensitize Solar Cell Application Using Metal Nanoparticle Embedded TiO <sub>2</sub> Nanowires	Biraj Shougaijam, Manipur Technical University, Imphal, Manipur, 795004	4787200
9.	Engineering Sciences	Self-Powered Electro-Optical Memory Devices For Next Generation Display And Data Storage Applications	Achu Chandran, Central Electronics Engineering Research Institute Pilani, Pilani, Rajasthan, 333031	4747790
10.	Engineering Sciences	Soot Modelling And Measurements In A Counterflow Diffusion Flame	Krishna Seshagiri, Indian Institute of Technology Palakkad, Palakkad, Kerala, 678557	4655040

11.	Engineering Sciences	Laser-Induced Forward Transfer For Microscale Printing of Metals	Deepak Marla, Indian Institute of Technology Bombay, Mumbai,Maharashtra,400076	4954400
12.	Engineering Sciences	Active Colloids In Complex Environments	Rahul Mangal, Indian Institute of Technology Kanpur, Kanpur,Uttar Pradesh,208016	4951400
13.	Engineering Sciences	Experimental Investigation And Performance Evaluation of HARQ Technique For Free-Space Optical Communication Systems	Aashish Mathur, Indian Institute of Technology Jodhpur, Jodhpur,Rajasthan,342001	4284100
14.	Engineering Sciences	Pavement Surface Characteristics For Safe And Sustainable Indian Roads	Kranthi Kumar Kuna, Indian Institute of Technology Kharagpur, Kharagpur,West Bengal,721302	4916380
15.	Engineering Sciences	Study And Design of A Cost-Effective Prosthetic Mechanical Heart Valve	Chandi Sasmal, Indian Institute of Technology Ropar, Ropar,Punjab,140001	4557820
16.	Engineering Sciences	Combining Machine Learning Techniques With First Principles To Screen Stable Functional Materials With Improved Properties.	Amrita Bhattacharya, Indian Institute of Technology Bombay, Mumbai,Maharashtra,400076	4960480
17.	Engineering Sciences	Packed Bed Gasification of Biomass With O <sub>2</sub> /CO <sub>2</sub> /Steam Mixtures	Varunkumar S, Indian Institute of Technology Madras, Chennai,Tamil Nadu,600036	4992900
18.	Engineering Sciences	Experimental Investigation On An Energy Efficient Regenerative Thermal Management Technique For Hybrid Electric Vehicles	Santanu Prasad Datta, Birla Institute of Technology And Science Pilani-Hyderabad, Hyderabad,Telangana,500078	2793710
19.	Engineering Sciences	Assessment of Indoor Plants For Improving Air Quality In Buildings	Aakash Chand Rai, Birla Institute of Technology And Science Pilani, Pilani,Rajasthan,333031	3971340
20.	Engineering Sciences	Performance Analysis of Electro-Mechanical Actuators In A 6-Dof Shake Table With HYBRID Actuation	Ganesh Mangavu, Sastra University, Thanjavur,Tamil Nadu,613401	4408800
21.	Engineering Sciences	Assessing The Suitability of Warm Mix Asphalt (WMA) Technology Using Tribological And Performance Characteristics	Nikhil Saboo, Indian Institute of Technology (Bhu), Varanasi,Uttar Pradesh,221005	3670680
22.	Engineering Sciences	An Experimental Investigation On Shock Wave Focusing And Associated High Temperature Radiating Flowfield	Mohammed Ibrahim Sugarno, Indian Institute of Technology Kanpur, Kanpur,Uttar Pradesh,208016	4970600

23.	Engineering Sciences	Design of IOT Based Energy Management System Using Cloud Computing Platform	Aftab Alam, Birla Institute of Technology Mesra, Ranchi, Ranchi,Jharkhand,835215	3870900
24.	Engineering Sciences	Design And Development of Flexible Tactile Sensor Matrix For Fetal Health Monitoring	T Eshwar, Central Electronics Engineering Research Institute Pilani, Pilani,Rajasthan,333031	4512710
25.	Engineering Sciences	Design And Development of Automated Lab-On-A-Chip Microfluidic System For Assessment of Cellular Reactive Oxygen Species	Abhay Sachdev, Central Scientific Instruments Organisation, Chandigarh,Chandigarh,160030	4324694
26.	Engineering Sciences	Engineering of Resilient Superhydrophobic Coating Using TiO <sub>2</sub> Nanostructured In Combination With Ultrathin Conformal Layer of Organic Molecules	Partha Roy, Central University of Rajasthan, Kishangarh,Rajasthan,305801	4997960
27.	Engineering Sciences	Wind Energy Conversion System With A Wide Range of Operating Speed	Vsspavankumar Hari, Indian Institute of Technology Bombay, Mumbai,Maharashtra,400076	4951810
28.	Engineering Sciences	A Novel Approach To Wind Turbine Siting And Wind Resource Assessment Using Smart Drone Based Wind Measurement System	Balaji Subramanian, Indian Institute of Technology Tirupati, Tirupati,Andhra Pradesh,517506	4999500
29.	Engineering Sciences	Development of Computational Model For Bipedal Walking Trajectories Generation And Analysis of Different Gait Abnormality	Vijay Bhaskar Semwal, Maulana Azad National Institute of Technology, Bhopal,Madhya Pradesh,462051	2081860
30.	Engineering Sciences	Development of Process Technology For Enhanced Resistant Starch Content In Rice And Rice Based Snack (Puffed Rice)	Anupam Roy, Birla Institute of Technology Mesra, Ranchi, Ranchi,Jharkhand,835215	5306400
31.	Engineering Sciences	Development of Light Weight Eutectic High Entropy Alloys (LWEHEAs)	Ram Sanjeevan Maurya, National Institute of Technology Rourkela, Rourkela,Orissa,769008	1843600
32.	Engineering Sciences	High Internal Phase emulsions as templates for making water dispersible hollow microspheres with hydrophobic pore internals for prolonged release of fragrance molecules	Anees Yunus Khan, Manipal University Jaipur, Jaipur,Rajasthan,303007	3119490

33.	Engineering Sciences	A Behavioral Study of Ransomware - To Develop A Generic Mitigation System	Gowtham Ramesh, Amrita Vishwa Vidyapeetham University Coimbatore, Coimbatore,Tamil Nadu,641105	1862850
34.	Engineering Sciences	Pharmacoengineered Lipid Core-Shell Nanoarchitectonics To Enhance Macrophages Uptake For Potential Translational Therapeutic Outcome	Subham Banerjee, National Institute of Pharmaceutical Education And Research Guwahati, Guwahati,Assam,781005	3470950
35.	Engineering Sciences	Soft Acoustic Metamaterials: Fabrication, Computation, And Instrument Development	Chandraprakash Chindam, Indian Institute of Technology Kanpur, Kanpur,Uttar Pradesh,208016	3616800
36.	Engineering Sciences	Combinatorial Design Of Novel, Rare-Earth Free Permanent Magnets	Pradeep K G, Indian Institute of Technology Madras, Chennai,Tamil Nadu,600036	4958160
37.	Engineering Sciences	Leveraging Machine Learning And Soft Computing Techniques To Investigate The Raag Formation In Indian Classical Music	Anupam Biswas, National Institute of Technology Silchar, Silchar,Assam,788010	2468400
38.	Engineering Sciences	Solution Approaches For Improving WiFi Performance In Dense Settings	Mukulika Maity, Indraprastha Institute of Information Technology Delhi, New Delhi,Delhi,110020	2435400
39.	Engineering Sciences	Development Of Wettability-Patterned Soft Surfaces For Enhanced Condensation	Pallab Sinha Mahapatra, Indian Institute of Technology Madras, Chennai,Tamil Nadu,600036	4988500
40.	Engineering Sciences	Analysis Of Interface Characteristics To Develop Dissimilar Wire And Arc-Based Additive Manufacturing Components For Industrial Applications.	Manidipto Mukherjee, Central Mechanical Engineering Research Institute, Durgapur,West Bengal,713209	4236900
41.	Engineering Sciences	Pressurized Drop Tube Furnace Experiments Towards Obtaining High-Pressure Kinetics Of Indian Coals And Coal Blends	Mayank Kumar, Indian Institute of Technology Delhi, New Delhi,Delhi,110016	4928000
42.	Engineering Sciences	Rate-Dependent Behavior Of Sand And Its Implications On Strength Prediction From Field Penetration Tests	Mousumi Mukherjee, Indian Institute of Technology Mandi, Mandi, Himachal Pradesh, 175005	2935180
43.	Engineering Sciences	Model Development And Analysis Of Flash Boiling Sprays For Internal Combustion Engines	Kaushik Saha, Indian Institute of Technology Delhi, New Delhi,Delhi,110016	4992830

44.	Engineering Sciences	Tailoring Heat Treatment And Microstructures In Metal Based Additive Manufactured (AM) Parts	Anil Meena, Indian Institute of Technology Madras, Chennai,Tamil Nadu,600036	4804800
45.	Engineering Sciences	Parametric Instability Of Long Flexible Cables: An Investigation On Control Techniques And Energy Harvesting	Ritwik Ghoshal, Indian Institute of Technology Kharagpur,Kharagpur,West Bengal, 721302	2853400
46.	Engineering Sciences	Continuous Flow Oil-Water Separation System Using Smart Separators Capable Of Low-Voltage Wettability Switching	Pradeep Kumar Sow, Birla Institute of Technology And Science Pilani-Goa, Zuarinagar,Goa,403726	4651900
47.	Engineering Sciences	Integrated Electro-Oxidation, Electro-Reduction And Electrocoagulation Process For The Degradation Of Ammoniacal Nitrogen In The Presence And Absence Of Carbon Based Pollutants	Anantha Singh Ts, Pandit Deendayal Petroleum University, Gandhinagar,Gujarat,382007	3155900
48.	Engineering Sciences	Design And Fabrication Of Helicopter Tail Rotor Shaft System Using Carbon Fibre Reinforced Composite	Saurabh Chandraker, National Institute of Technology Karnataka, Surthakal,Karnataka,575025	2338600
49.	Engineering Sciences	Instrumentation, Real Time-Monitoring And Remediation Of A Steep Soil Slope Stability In Meghalaya	Smrutirekha Sahoo, National Institute of Technology Meghalaya, Shillong,Meghalaya,793003	3503500
50.	Engineering Sciences	Bio-Inspired Hydrofoils For Marine Applications	Anirban Bhattacharya, Indian Institute of Technology Kharagpur, Kharagpur,West Bengal,721302	2829500
51.	Engineering Sciences	Time-Variant Non-Reciprocal Components For MmWave Applications.	Sarang Pendharker, Indian Institute of Technology Kharagpur, Kharagpur,West Bengal,721302	4862150
52.	Engineering Sciences	Real-Time Hybrid Simulation: Implementation, Validation And Application To Multi-Hazard Performance Assessment Of Buildings Outfitted With A Novel Damping Device	Chinmoy Kolay, Indian Institute of Technology Kanpur, Kanpur,Uttar Pradesh,208016	4992290
53.	Engineering Sciences	Energy Harvesting For 5G Wireless Networks: Impact On Diverse Wireless Applications	Sudhakar Modem, Indian Institute of Technology Jammu, Jammu,Jammu and Kashmir,181221	2165900
54.	Life Sciences	Characterization of RhoV, An RHO-GTPase, In NSCLC Development And Treatment	Sudhanshu Kumar Shukla, Indian Institute of Technology Dharwad,Dharwad, Karnataka,580011	5577264

55.	Life Sciences	Mitochondrial Fusion Associated With Mitophagy And Exosomes: A Novel Biomarker Development And Therapeutics In Breast Cancer Progression	Anbarasu Kannan, Central Food Technological Research Institute, Mysore,Karnataka,570020	5268254
56.	Life Sciences	Understanding The Translation Strategies Mycobacterium Tuberculosis Adopts In Dormancy	Prem Singh Kaushal, Regional Centre For Biotechnology, Faridabad,Haryana,121004	4633459
57.	Life Sciences	Development of Early And Grower Friendly Diagnostic Tools For Viral And Phytoplasmal Diseases In Vegetatively Propagated Marigold To Ensure Quality And Quarantine	Prabha K, Directorate of Floricultural Research, Pune,Maharashtra,411005	4713174
58.	Life Sciences	Exploration of Antimicrobial Photosensitizers From Anoxygenic Photosynthetic Bacteria	Vemuluri Venkata Ramana, Institute of Microbial Technology, Chandigarh,Chandigarh,160036	3909859
59.	Life Sciences	Modulation of A-Synuclein Amyloid Assembly By Human Chaperone-Like Proteins	Neha Jain, Ahmedabad University, Ahmedabad,Gujarat,380009	4100026
60.	Life Sciences	Epistasis Analysis of APOE In Understanding The Genetic Architecture of Alzheimer's Disease: A Computational Genetics Approach	Bratati Kahali, Indian Institute of Science, Bangalore, Bangalore,Karnataka,560012	3743696
61.	Life Sciences	Establishment of 3D In Vitro Culture Conditions For Maintaining Long-Term Stemness In Sheep Spermatogonial Stem Cells	Binsila B Krishnan, National Institute of Animal Nutrition And Physiology, Bangalore,Karnataka,560030	4226428
62.	Life Sciences	Role of HOTAIRM1 Long Non-Coding RNA In Chemo Resistance of Acute Myeloid Leukemia	Surender Kumar Sharawat, All India Institute of Medical Sciences, Delhi,New Delhi,Delhi,110029	4849196
63.	Life Sciences	Three Dimensional Bioprinting Using Decellularized Extracellular Matrix (DECM) As Potential Bioink For Oesophageal Replacement	Kirthanashri S Vasanthan, Amity University Noida, Noida,Uttar Pradesh,201303	4840130
64.	Life Sciences	Elucidating The Role Of Spt5 Like Protein In Transcriptional Regulation And Associated Functions In Toxoplasma Gondii	Pallabi Mitra, University of Hyderabad, Hyderabad,Telangana,500046	4162052

65.	Life Sciences	Understanding The Role Of Light Exposure And Prolonged Near-Work In Myopia - An Experimental Study To Identify Optical/ Imaging Markers For Sight-Threatening Myopia	Pavan Kumar Verkicharla, Hyderabad Eye Research Foundation, Hyderabad,Telangana,500034	3196600
66.	Life Sciences	Understanding the molecular basis of the interaction between stem cell niche and the fate of stem cells	Richa Arya, Dr B R Ambedkar Centre For Biomedical Research, New Delhi,Delhi,431004	4590696
67.	Life Sciences	Real time assessment of shift of ICA during extended endoscopic skullbase surgery using intraoperative doppler and the role of tumour consistency in causing ICA displacement	Prakash Nair, Sree Chitra Tirunal Institute For Medical Sciences And Technology, Thiruvananthapuram,Kerala,695011	1864890
68.	Life Sciences	Exploitation of insect gut microbes for biodegradation of gossypol in cottonseed meal	Akbar Smd, University of Agricultural Sciences Dharwad,Dharwad, Karnataka,580005	3283764
69.	Life Sciences	Investigating the molecular mechanism of impaired regulatory immune response in Inflammatory bowel disease (IBD).	Rashmi Kumar, Institute of Microbial Technology, Chandigarh,Chandigarh,160036	4285440
70.	Life Sciences	“Development of specific ‘Molecular signatures’ for the diagnosis of extrapulmonary tuberculosis using an integrated omics approach”	Sagarika Halder, Post Graduate Institute of Medical Education And Research, Chandigarh,Chandigarh,160012	4587264
71.	Life Sciences	Mitochondrial clearance in aging brain: therapeutic approach against differential neurodegeneration in Parkinson’s disease.	Joy Chakraborty, Indian Institute of Chemical Biology, Kolkata,West Bengal,700032	3956411
72.	Life Sciences	Development of microalgae based feed supplement for enhanced bioavailability of essential micronutrients for monogastric animals.	Gulshan Kumar, National Agri Food Biotechnology Institute,Mohali,Punjab,160071	3372019
73.	Life Sciences	Identification of key determinant(s) of immune competence in pigs through proteomic approach	Jagan Mohanarao Gali, Central Agricultural University, Imphal,Manipur,796014	5186695
74.	Life Sciences	Understanding the orchestra: Membrane remodelling and cytoskeleton dynamics	Somlata, Jamia Millia Islamia, New Delhi,Delhi,110025	5335000

75.	Life Sciences	Decoding 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3-mediated altered glucose metabolism in PTEN-deficiency driven Prostate cancer	Susmita Mondal, Presidency University, Kolkata,West Bengal,700073	5519125
76.	Life Sciences	Translational of molecular mechanism underlying circulating mitochondrial DNA release during cardiac pathological hypertrophy towards therapy of the myocardium	Santanu Rana, Raja Peary Mohan College, Hooghly,West Bengal,712258	5623438
77.	Life Sciences	Role of ETS1 transcription factor in metastatic Triple negative breast cancer	Nirmalya Sen, University of Kalyani, Kalyani,West Bengal,741235	4299084
78.	Life Sciences	Fundamental Elucidation of Role of Hydrogen Peroxide (Reactive Oxygen Species) as Signaling Molecule for Enhanced Lipid Biosynthesis in Microalgae and Its Application for Enhancement of High-Value Metabolites	Ajam Yakub Shekh, Central Food Technological Research Institute, Mysore,Karnataka,570020	2535840
79.	Life Sciences	Mesenchymal stem cell mitochondrial transfer effectively protects mutant Leber's Hereditary Optic Neuropathy (LHON) cells from mitochondrial damage: Molecular and epigenetic screening of LHON patients	Mohanadevi Subramaniam, Vision Research Foundation, Chennai,Tamil Nadu,600006	4810045
80.	Life Sciences	Transcriptomic Analysis of $\mu$ Tumor Spheroid Derived from Single Cancer Stem Cell to Identify Novel Therapeutic Targets in Breast Cancer	Amit Kumar Srivastava, Indian Institute of Chemical Biology, Kolkata,West Bengal,700032	4649400
81.	Life Sciences	The Role of Heterochromatin in Circadian Clock Gene Regulation in Neurospora crassa	Mukund Ramakrishnan, Indian Institute of Science Education and Research Berhampur, Ganjam,Orissa,760010	3296502
82.	Physical & Mathematical Sciences	Modelling And Simulation of Polarized Dust Emission Using The Planck Data And External Templates	Tuhin Ghosh, National Institute of Science Education And Research Bhubaneswar, Bhubaneshwar,Orissa,751005	4493059
83.	Physical & Mathematical Sciences	Differentiability And Orthogonality In Banach Spaces	Priyanka Grover, Shiv Nadar University, Gautambudh Nagar,Uttar Pradesh, 203207	1982332



84.	Physical & Mathematical Sciences	Spin Orbit Engineering of Dark Dirac Excitons	Anshuman Kumar, Indian Institute of Technology Bombay,Mumbai, Maharashtra,400076	4037000
85.	Physical & Mathematical Sciences	DEFINE: Development of Efficient Full Color InGaN Nanostructured LED Emitters	Praveen Kumar, Indian Association For The Cultivation of Science, Kolkata,West Bengal,700032	4604429
86.	Physical & Mathematical Sciences	Droplet Suspensions In Homogeneous Turbulence	Prasad Parlekar, Tata Institute of Fundamental Research Centre For Interdisciplinary Sciences, Hyderabad,Telangana,500107	4555288
87.	Physical & Mathematical Sciences	Questions In Analytic Number Theory - Classical And Number Field Settings	Akshaa Vatwani, Indian Institute of Technology Gandhinagar, Gandhinagar,Gujarat,382424	1998832
88.	Physical & Mathematical Sciences	Computational Aspects Of Social Choice: Theory And Practice	Neeldhara Misra, Indian Institute of Technology Gandhinagar, Gandhinagar,Gujarat,382424	2154196
89.	Physical & Mathematical Sciences	Cryptanalysis Of Stream Cipher	Santanu Sarkar, Indian Institute of Technology Madras, Chennai,Tamil Nadu,600036	2126146