

New Sponsored Projects

| Sl No | Name of Project | Principal Investigator | Co-Investigator | Sponsoring Agency | Amount Sanctioned (in lakhs) | Duration |
|-------|---|------------------------|---------------------|-------------------|------------------------------|-----------|
| 1 | Brain-like computing – Designing the basic building blocks for artificial neurons and synapses | Dr. Bikas C Das | Dr. Leszek Majewski | UGC-UKIERI | 16.46 lakhs | 2018-2020 |
| 2 | Conformal Approach to Supergravity: New Perspectives and Applications | Dr. Bindusar Sahoo | None | SERB | 26.25 lakhs | 2019-2022 |
| 3 | Certain class of diagram algebras arising from Schur-Weyl Duality | Dr. Geetha T | None | SERB | 6.60 lakhs | 2018-2021 |
| 4 | Topochemical synthesis of pseudoprotein | Dr. Kana M Sureshan | None | SERB | 49.78 lakhs | 2019-2022 |
| 5 | STEP | Prof. M P Rajan | None | KSCSTE | 3.5 lakhs | |
| 6 | Van der Waals superconducting circuits operating at elevated temperatures & magnetic fields | Dr. Madhu Thalakulam | None | SERB | 56.94 lakhs | 2019-2022 |
| 7 | Development of New and Utilization of existing CRISPR-Cas tools to understand regulators of cytoskeleton in cardiomyocyte | Dr. N Sadananda Singh | None | SERB | 47.35 lakhs | 2019-2022 |
| 8 | Genome-scale screening for response to drug treatment | Dr. N Sadananda Singh | None | SERB | 40.98 lakhs | 2018-2021 |
| 9 | Mechanism of meiotic crossing over through the Msh4-Msh5 dependent pathway | Dr. Nishant K T | None | SERB | 36.4 lakhs | 2019-2022 |

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| 10 | Study of Convolution Operators on Topological Groups | Dr. Devaraj P | None | SERB | 6.6 lakhs | 2019-2022 |
| 11 | Metal-decorated graphynes for molecular adsorption | Dr. R S Swathi | None | KSCSTE | 22.4 lakhs | 2018-2021 |
| 12 | Targeted editing of potato genome to develop variety specific True Potato Seed (TPS) | Dr. Ravi Maruthachalam | None | NASF | 29.49 lakhs | 2018-2021 |
| 13 | Apomixis Technologies for Increasing Agricultural Production (FBR) | Dr. Ravi Maruthachalam | None | CSIR-CCMB | 12 lakhs | 2019-2020 |
| 14 | High fluorine content DNA micelle: A universal "OFF/ON" ¹⁹ F-NMR-based probe for the detection of miRNA and Telomerase for cancer diagnosis | Dr. Reji Varghese | Dr. Mahesh Hariharan | DBT | 48 lakhs | 2019-2022 |
| 15 | Gauge theory of categorical principal bundles | Dr. Saikat Chatterjee | None | SERB | 6.6 lakhs | 2019-2022 |
| 16 | Moduli space of vector bundles and ACM bundles | Dr. Sarbeswar Pal | None | SERB | 4.4 lakhs | 2018-2021 |
| 17 | RNF 167, an ubiquitin E3 ligase with several reported mutations in diverse cancers, controls NF- κ B activation | Prof. Srinivasa Murty Srinivasula | Dr. Tapas Kumar Manna | SERB | 31.35 lakhs | 2018-2021 |
| 18 | Insights into the Interplay of H ₂ S and NO at Redox Active Metal sites | Dr. Subrata Kundu | None | SERB | 37.4 lakhs | 2018-2021 |
| 19 | Tailoring the Catalytic Properties of Atom-Precise Metal Nanoclusters | Dr. Sukhendu Mandal | None | SERB | 87 lakhs | 2018-2021 |
| 20 | Some Extremum Eigenvalue Problems Related to Combinatorial PDE | Dr. Sumit Mohanty | None | SERB | 6.6 lakhs | 2018-2021 |

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| 21 | Understanding diversification of Impatiens species in the Northern Western Ghats | Dr. Ullasa Kodandaramaiah | Dr. Deepak Barua | DBT | 30.552 lakhs | 2018-2021 |
| 22 | Study of Stochastic Nematic Liquid Crystal Models and Related Constrained Physical Problems | Dr. Utpal Manna | None | SERB | 6.6 lakhs | 2019-2022 |
| 23 | Study of Novel Oxide and Graphene Core Shell nanoarchitectures for High Temperature Thermoelectric Power Generations | Dr. Vinayak B Kamble | None | SERB | 44.80 lakhs | 2019-2022 |
| 24 | Junction barrier modulation studies in metal oxide 1D core-shell nanostructure for chemical sensors | Dr. Vinayak B Kamble | None | DST | 35 lakhs | 2018-2021 |

Consultancy Projects

| Sl No | Name of Project | Principal Investigator | Co-Investigator | Sponsoring Agency | Amount Sanctioned (in lakhs) | Duration |
|-------|---|------------------------|-----------------|-----------------------------|------------------------------|-----------|
| 1 | Non-destructive characterization of the thickness of thermal barrier coatings using THz spectroscopy: A feasibility study | Dr. Rajeev N Kini | None | GE INDIA INDUSTRIAL PVT LTD | 4.42 lakhs | 2018-2019 |

Women Scientist Project

| Sl No | Name of Project | Principal Investigator | Co-Investigator | Sponsoring Agency | Amount Sanctioned (in lakhs) | Duration |
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| 1 | Investigating post-transcriptional regulation of steroidogenic genes during development | Dr. Smitha Vishnu | None | DST | 31.5 lakhs | 2019-2022 |

Ongoing Sponsored Projects

| SI No | Name of Project | Principal Investigator | Co-Investigator | Sponsoring Agency | Amount Sanctioned (in lakhs) | Duration |
|-------|---|---------------------------|---|-------------------|------------------------------|-----------|
| 1 | Vanadium Based Hybrid Materials for Electrochemical Energy Storage | Dr. A Thirumurugan | None | SERB | 45.7 lakhs | 2017-2020 |
| 2 | N-Heterocyclic (NHC)-mediated Desymmetrization of meso-cyclic Anhydrides and Enantioselective Dearomative, Conjugate Borylation Reactions | Dr. Alagiri Kaliyamoorthy | None | SERB | 40.92 lakhs | 2016-2019 |
| 3 | Directed Site-Selective C-H Functionalization of Aromatic and Heteroaromatic Precursors | Dr. Alagiri Kaliyamoorthy | None | SERB | 46.36 lakhs | 2017-2021 |
| 4 | Center for computation, modeling and simulation (CCMS) | Dr. Amal Medhi | Dr. Anil Shaji, Dr. Nishant K T, Dr. R S Swathi, Dr. Archana Pai, Dr. S Shankaranarayanan, Dr. K R Arun | MHRD | 400 lakhs | 2014-2019 |
| 5 | Localization and Flow of Information in Quantum Computing and Open Quantum Dynamics | Dr. Anil Shaji | None | SERB | 21.03 lakhs | 2017-2020 |
| 6 | A Detail Study of Electrolyte-Gated Organic Field-effect Transistors | Dr. Bikas C Das | None | SERB | 49.48 lakhs | 2017-2021 |
| 7 | Development of Charge-Transfer Nanohybrids of 2D Transition Metal Dichalcogenides to Fabricate Flexible Thin Film Devices | Dr. Bikas C Das | None | SERB | 23.10 lakhs | 2018-2021 |
| 8 | Collective Dynamics of Complex Nonlinear Systems | Dr. D V Senthil Kumar | None | CSIR | 25.60 lakhs | 2017-2020 |

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| 9 | Development of solid-state hybrid hydrogen storage using Palladium and Magnesium nanoclusters | Dr. Deepshikha Jaiswal Nagar | None | ISRO | 34.06 lakhs | 2017- 2020 |
| 10 | Development of hydrogen sensors for extended range of temperatures from 100K to 300K using 2D nano cluster assembled films of Palladium | Dr. Deepshikha Jaiswal Nagar | None | ISRO | 23.8 lakhs | 2016-2018 |
| 11 | Effect of size on the superconducting properties of films assembled in nanocluster form in elemental superconductors Al, Pb and Nb | Dr. Deepshikha Jaiswal Nagar | None | SERB | 23.06 lakhs | 2016-2019 |
| 12 | Planarization of Porphyrin Dimers and Trimers for Near – IR Applications | Dr. Gokulnath Sabapathi | None | SERB | 26 lakhs | 2016-2019 |
| 13 | Community plant-pollinator interactions at the landscape level (Extension phase) | Dr. Hema Somanathan | Dr. Deepak Barua | DBT | 33.19 lakhs | 2015- 2020 (Extended for 2 years) |
| 14 | Ecology and Conservation of Freshwater Swamp Ecosystems (Extension Phase) | Dr. Hema Somanathan | Dr. Rajendra Prasad | DBT | 56.22 lakhs | 2015- 2020 (Extended for 2 years) |
| 15 | The effect of interannual variation in flowering intensity, periodicity and synchrony on pollination and fruit set in a highly seasonal tropical forest in the western ghats | Dr. Hema Somanathan | Dr. Deepak Barua | SERB | 20.42 lakhs | 2018-2021 |
| 16 | Functional Analysis for Genetic and Molecular Mechanisms that Maintain Nutrient and Energy Homeostasis | Dr. Jishy Varghes | None | SERB | 42.90 lakhs | 2017-2021 |

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| 17 | Nanoscale writing of bespoke Graphene devices for electronic and plasmonic scalable technologies. | Dr. Joy Mitra | Prof. Ravi Silva, Dr. P Dawson | UKIERI-UGC | 28.8 lakhs | 2017-2019 |
| 18 | Design of a Surface-Enhanced Spectroscopy based Device for the Rapid Detection of Organophosphate Pesticides and Pyrethroid Insecticides in Fruits and Vegetables | Prof. K George Thomas | Dr. Thomas Biju Mathew, Dr. Anil Shaji, Dr. K R Arun, Dr. Y Adithya Lakshmana, Dr. Sheetal Dharmatti, Dr. R S Swathi | SERB | 284.55 lakhs | 2017-2020 |
| 19 | Dipolar and Multipolar Interactions in Assembled Molecules and Nanostructures: Developing a General Description and its Applications | Prof. K George Thomas | Dr. Mahesh Hariharan Dr. R S Swathi | DST | 590.31 lakhs | 2016-2019 |
| 20 | J C Bose Fellowship | Prof. K George Thomas | None | SERB | 82.40 lakhs | 2014-2019 |
| 21 | Chemical Biological Intervention in Cell Signaling | Dr. Kana M Sureshan | None | DST | 242 lakhs | 2015-2019 |
| 22 | Number Theory | Dr. K Srilakshmi | None | DST | 35 lakhs | 2014-2019 |
| 23 | Functional characterization of genetic and epigenetic regulatory networks involved in the reproductive development in rice | Dr. Kalika Prasad | None | DBT | 105 lakhs | 2015- 2020 |
| 24 | Engineered 2-dimensional transition metal dichalcogenide (TMD) nanostructures for efficient hydrogen generation | Dr. M M Shaijumon | None | SERB | 37.38 lakhs | 2017-2020 |
| 25 | Hybrid Energy Storage Devices based on Multifunctional Nanocomposite Materials | Dr. M M Shaijumon | Dr. Thirumurugan Alagarsamy | DST | 104 lakhs | 2017-2020 |

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| 26 | Cost-effective handheld medical device for realtime intraoperative scanning applications at operation bedside | Dr. M Suheshkumar Singh | None | SERB | 31.74 lakhs | 2017-2020 |
| 27 | DST FIST Grant for School of Chemistry@IISER Thiruvananthapuram: 500 MHz NMR Spectrometer with Solid State Attachment | Dr. Mahesh Hariharan | None | DST | 685 lakhs | 2017-2022 |
| 28 | Charge and Energy Transfer in Molecular Multifunctional Materials | Dr. Mahesh Hariharan | Prof. K George Thomas and Dr. R S Swathi | DST | 10.2 lakhs | 2017-2020 |
| 29 | Approaches to improve open circuit voltage and fill factor- Enhancing the power conversion efficiency in organic- inorganic hybrid systems | Dr. Manoj A G Namboothiry | Dr. Ajay Venugopal | DST | 88 lakhs | 2016-2019 |
| 30 | Understanding human gene functions involved in cholesterol homeostasis Cardiomyocyte | Dr. N Sadananda Singh | None | DBT | 32.50 lakhs | 2017-2022 |
| 31 | Elucidating post-transcriptional regulation of circadian behavior in <i>Drosophila</i> | Dr. Nisha N Kannan | Dr. Jishy Varghese | DBT | 157 lakhs | 2016- 2021 |
| 32 | Tunable azacrown-based graphene nanomeshes for gas separation | Dr. R S Swathi | None | SERB | 18 lakhs | 2017-2020 |
| 33 | Bifunctional Enamine/Transition Metal Synergistic Catalysis for the Formation of New-C-C Bonds: Synthesis and Exploration of New Class of Phosphanyl Amino Ligands for Catalysis | Dr. Rajendar Goretti | None | SERB | 35.42 lakhs | 2017-2020 |

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| 34 | Ramanujan Research Award | Dr. Rajendar Goretti | None | SERB | 38 lakhs | 2016-2021 |
| 35 | Investigation of the interaction of acoustic phonons with electrons in semiconductor nanostructures | Dr. Rajeev N Kini | None | KSCSTE | 38.32 lakhs | 2018-2021 |
| 36 | Synthesis and characterization of frustrated spin-1/2 chain compounds. | Dr. Ramesh Chandra Nath | None | DAE | 28.11 lakhs | 2017-2020 |
| 37 | Stereoconvergent Cross-Coupling : Asymmetric Synthesis of Boronic Esters and Silanes | Dr. Ramesh Rasappan | None | SERB | 38 lakhs | 2016-2021 |
| 38 | Asymmetric Catalysis: Exploring Organosilanes in Stereospecific and Convergent Reactions | Dr. Ramesh Rasappan | None | SERB | 55 lakhs | 2016-2019 |
| 39 | Identification of novel kinetochore proteins with special reference to improving <i>in vivo</i> haploid production in plants | Dr. Ravi Maruthachalam | None | Dupont Young Professor Grant | 15 lakhs | 2014-2019 |
| 40 | Ramanujan Research Award | Dr. Ravi Pant | None | SERB | 38 lakhs | 2015-2020 |
| 41 | Solid State Structural Analysis of Photoactive Molecular Assemblies on DNA Scaffold through Single Crystal X-ray Diffraction | Dr. Reji Varghese | None | KSCSTE | 27.80 lakhs | 2017-2020 |
| 42 | Gerbes and Categorical geometry | Dr. Saikat Chatterjee | None | SERB | 13.35 lakhs | 2017-2020 |
| 43 | Understanding the role of Periostin-Itgav interactions in adult and fetal hematopoiesis | Dr. Satish Khurana | None | DBT | 359.84 lakhs | 2016- 2021 |
| 44 | Identification and Characterization of Molecular Pathways involved in Immune-related Autophagy | Prof. Srinivasa Murty Srinivasula | Dr. Tapas Kumar Manna | DBT | 67.81 lakhs | 2018- 2021 |

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| 45 | Elucidating the role of GTP-induced transition of EB1 dimer to monomer in the regulation of microtubule plus ends | Dr. Tapas Kumar Manna | None | CSIR | 15 lakhs | 2018-2021 |
| 46 | To determine the role of ubiquitin ligase SCF-FBXW7 in regulation of centriole biogenesis and duplication in human cells | Dr. Tapas Kumar Manna | None | SERB | 63 lakhs | 2017-2020 |
| 47 | Determining the role of microtubule plus tip protein EB1 in regulation of spindle-kinetochore associated protein complex Ska: the mechanism underlying the stabilization of spindle-kinetochore attachment | Dr. Tapas Kumar Manna | None | DBT | 59 lakhs | 2016-2019 |
| 48 | Comparative biogeography of plants of the Western Ghats | Dr.Ullasa Kodandaramaiah, N.Mohanan (JNTBGRI) | P Padmesh, G Rajkumar, K B Ramesh kumar, T Shaju | DBT | 62.19 lakhs | 2015-2020 (Extended 2 years) |
| 49 | INSPIRE Faculty Award | Dr.Ullasa Kodandaramaiah | None | DST | 35 lakhs | 2014-2019 |
| 50 | Theoretical investigation on relaxation dynamics of ultrafast generated molecular triplet states | Dr. Vennapusa Sivaranjana Reddy | None | SERB | 23.26 lakhs | 2016-2019 |
| 51 | Development of Novel metal oxide-graphene based nanocomposite materials for Microsensors and Nanoelectronics device Applications. | Dr. Vinayak B Kamble | None | DST | 35 lakhs | 2016-2021 |
| 52 | Engineered 1D Heterostructures for Chemical Sensor Device Applications | Dr. Vinayak B Kamble | None | MeitY | Facility Support | 2017-2020 |

Women Scientist Project

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|-------|---|--------------------------|-----------------|-------------------|------------------------------|-----------|
| 1 | Novel polymer supported chiral metal catalysts: asymmetric cross-coupling reactions | Dr.Tamilselvi Chinnusamy | None | DST | 29.4 lakhs | 2017-2020 |

Completed Sponsored Projects

During the period 2018-19, 10 projects have completed. The details are given below:

| Sl No | Name of Project | Principal Investigator | Co-Investigator | Sponsoring Agency | Amount Sanctioned (in lakhs) | Duration |
|-------|--|-------------------------|---|----------------------------------|------------------------------|-----------|
| 1 | Molecular Magnesium Hydrides: Hydrogen Storage | Dr. Ajay Venugopal | None | DST | 35 lakhs | 2013-2018 |
| 2 | DST-Inspire Faculty Grant | Dr. Gokulnath Sabapathi | None | DST | 86.27 lakhs | 2013-2018 |
| 3 | MicroRNA functions in regulation of metabolism and energy homeostasis | Dr. Jishy Varghese | None | DST | 73 lakhs | 2013-2018 |
| 4 | Smartening smart materials by nano-carbon incorporation : An Industry Academia collaboration in surface engineering and characterisation | Dr. Joy Mitra | Prof. Ravi Silva, Dr.Chintan Bhatt, Dr. Syed Asif | Royal Academy of Engineering, UK | 40 lakhs | 2017-2019 |
| 5 | Design, synthesis and photocatalytic water splitting properties of functional cobalt based inorganic-organic hybrids | Dr. Mahesh Hariharan | None | KSCSTE | 45.2 lakhs | 2015-2018 |
| 6 | Inspire Faculty Fellowship | Dr. Mithun Mukherjee | None | DST | 35 lakhs | 2013-2018 |
| 7 | Generation and characterization of minichromosomes and neocentromere formation in plants | Dr. Ravi Maruthachalam | None | DBT | 82.5 lakhs | 2013-2018 |

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| 8 | Mid Infrared (Mid-IR) sources using stimulated Brillouin scattering and soliton self-frequency shift Reference | Dr. Ravi Pant | None | SERB | 63.7 lakhs | 2015-2018 |
| 9 | Morphometry and phylogeography of Honey Bees and Stingless Bees in India Phase-II ah | Dr. Ullasa Kodandaramai | Network-Project with many institutions across India | DBT | 33.73 lakhs | 2015-2018 (Extended upto 25.03. 2019) |
| 10 | Comparative NMR study of structure and dynamics of VDACs, human VDAC1 and rice VDAC4, using segmental isotope labeling technique | Dr. Vinesh vijayan | None | SERB | 35.88 lakhs | 2015-2018 |