



Poornaprajna Institute of Scientific Research

PROMOTED AND MANAGED BY ADMAR MUTT EDUCATION FOUNDATION (AMEF)
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In the news

- ★ Two industry projects sponsored by GTC Vorro Environmental Services, USA and Deepak Novochem Technologies Ltd, Pune were successfully completed by Dr. Shanbhag's group during 2022.
- ★ A DST project titled "Emergence of quantum criticality for hermitian and non-hermitian topological state of quantum matter" has been approved: PI: Dr. Sujit Sarkar, Duration: 2022-2024
- ★ Mr. Ranjith Kumar received AWSAR award for the best science story titled "Edge States: an enigmatic story in physics" from DST.
- ★ Four Research Scholars successfully defended their Ph.D. viva-voce examination, and obtained doctoral degree from MAHE, Manipal.
- ★ Five best presentation awards were received by PhD students in 2022 at the National and International conferences.
- ★ Mr. Karthik received Dr. KV Rao Research Award in Physics category and secured the runner-up 1 position.
- ★ Two new faculty members Dr. Naresh Nalajala and Dr. Rajib Kumar Singha have been appointed as Assistant Professors at PPISR.
- ★ PPISR signed MOUs with prestigious organizations viz. GITAM University, REVA University, and Karnataka Science and Technology Academy.



H. H. Sri Eeshapriya Theertha Swamiji, Chairman



H. H. Sri Vibudhesha Theertha Swamiji, Founder, (1928 - 2009)



H. H. Sri Vishwapriya Theertha Swamiji

Vision

To promote and nurture excellence in the fundamental and applied sciences for the advancement of scientific knowledge and the benefit of mankind

From the Director's Desk



It gives me a immense pleasure in presenting the 13th volume of “Newsletter” highlighting the overall activities and achievements of PPISR during 2022. We have continued our efforts to achieve new milestones both in academic and sponsored research projects. The new year began with two new most challenging projects from GTC-VORRO Environmental, USA and SULZER-GTC, USA with signing agreement for a period of one year. All these projects brought new dimension on new areas of research like adsorbent materials for sulphide removal and valorisation of natural gas to value addition to petrochemicals. Other two projects, one from DST-SERB on quantum physics and the second one sponsored by M/S Sravathi AI Technology Private Limited on computational studies on pharma compounds

The institute has published 33 research papers in highly reputed international journals and two book chapters in this year. Four of our research scholars received best presentation awards and two senior research fellows received ‘National Awards’ from prestigious institutions. Four Students Dr. Swetha Lankipalli , Dr. Marilyn D’Mello, Dr. Rahul Sharma and Dr. Kirana MP, were awarded PhD degree from MAHE Manipal. We appointed two new young faculty members, Dr Naresh Nalajala and Dr Rajib kumar Singha in the ‘Materials Science and Catalysis Division’. We have also recruited several new PhD research scholars and project fellows. We have continued our efforts to conduct outreach programs for our PPC high school students and research orientation programs for several colleges/university students in Karnataka. This year nearly forty research interns from various colleges/universities carried out research activities with our faculty members in all areas of research as a part of their MSc projects. We published some good research papers in association with these interns. There were three MOU signed with well-known Institutes like GITAM, REVA and Karnataka Science and Technology Academy (KSTA) to facilitate collaborative research programs and scientific exchange programs/conferences etc. On the whole, the year 2022 was challenging, highly productive and successful. I would like to attribute all these achievements to excellent work carried by our team faculty members, students and supporting staff. I also would like to express my deep gratitude to H H Shri Eeshapriya Theertha Swamiji and AMEF management for their continuous support, encouragement and guidance to achieve these successful milestones.

Dr. Anand B. Halgeri

Editorial



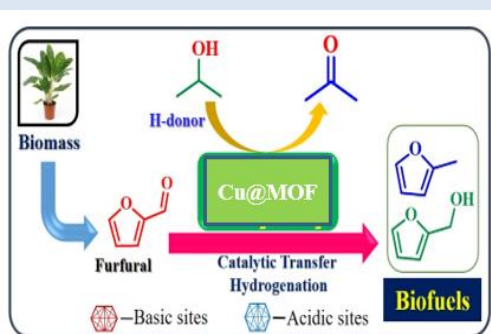
2022 has been a productive year for PPISR. The shadows of SARS-COV-2 pandemic is slowly disappearing, and we have moved out of those online days to in person scientific discussions within and with many elite scientists from outside the institute. Overall, 12 sponsored projects have been executed with the addition of three new projects this year. 33 publications in high impact journals were published in the year 2022. There were 4 best presentation awards in national and international conferences and two research scholar received national level awards, highlighting the quality of research done at PPISR. The issue covers the research highlights of each group working in different areas of science, publications, research activities and important events at PPISR and milestones. As an editor of this issue, it is my pleasure to convey readers about the overall research activities and related events at PPISR in 2022.

Dr. Udupi A. Ramagopal

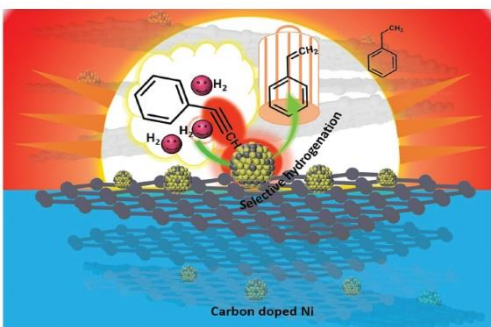


Dr. Ganapati Shanbhag's group conducts research in frontier areas of catalysis for the design of novel catalysts for green chemical processes such as chemical fixation of CO₂ to make valuable chemicals such as methanol, carbonates, carbamates and substituted urea, conversion of biomass by-products like glycerol, furfural levulinic acid into value-added chemicals, pore engineering of microporous materials for shape-selective catalysis and gas adsorption. The group also works on novel materials design for gas sensors. Till 2022, the group has published around 45 research articles in internationally reputed journals, 3 book chapters and 4 patents.

Three students received best presentation awards at national & international conferences this year. Ms. Marilyn Dmello received PhD degree from MAHE Manipal in September 2022 on the PhD topic MOF materials for gas sensing applications. Overall, 8 publications have come out of this group in international journals this year and 4 sponsored projects have been executed. The research is supported by the recently established *Center for Quantum and Computational Studies* at PPISR with 5 high performance computers and DFT software. During 2022, 4 sponsored projects were executed by Dr. Shanbhag's Group. Two industry projects sponsored by Sulzer-GTC Technology Inc, USA and GTC Vorro Environmental Services, USA were successfully completed by Dr. Shanbhag's group. The third industry project sponsored by DNTL, Pune on aromatics alkylation process is also successfully executed. A Govt. project sponsored by VGST under CESEM grant on "Chemical fixation of CO₂ by converting into value-added chemicals" is also under progress. Overall, the group could achieve significantly in sponsored and academic research programmes due to the hard work of all the researchers involved.



Dr. Sanjeev Maradur's group is working on metal organic framework (MOF) for catalytic applications. The group published a work on Synergistic Catalytic Activity of Core-shell Pd@UiO-66(Hf) MOF Catalyst for the one-pot Hydrogenation-Esterification of Furfural. The major findings have been published in *Microporous and Mesoporous Materials Journal*, Elsevier Publishing. Also, the group continued to work on metal organic framework catalysis for the hydro-deoxygenation of furfural to 2-methylfuran (2-MF) by catalytic transfer hydrogenation (CTH) which is a selective route to remove the excess oxygen containing functional groups in the biomass-derived feedstock.



The target product, 2-methyl furan, an important organic chemical intermediate, as widely used in medicines, pesticides, and fine chemicals. The major findings of the project will be communicated soon for a possible publication in international journal of high repute. Also, a collaborative work with Andhra University on selective transformation of alkynes into alkenes over Nickel based catalyst is published in *Catalysis Science and Technology*, RSC publishing group and this work has been selected for journal cover page. 12 MSc students worked under the guidance of Dr. Maradur for the summer internship. Two research proposal has been submitted to Govt. funding agencies for possible funding. The group has published 6 article in prestigious journals.

The key focus of **Dr. Naresh Nalajala's** research group "SHAPECAT" at PPISR is to unravel the structure-property relationships of shape-engineered nanohybrid materials. One of the objectives of SHAPECAT is to design and develop the well-integrated shape-engineered nanohybrids. SHAPECAT is aiming at the sustainable production of green hydrogen from sunlight harvesting (photocatalysis) and using renewable electricity (electrocatalysis). SHAPECAT foresee to explore the underline scientific knowledge on conversion of green house gas emissions (for eg., CO₂, CH₄ etc), stable and abundant molecules (for eg., N₂) to value added chemicals (for eg., methanol, ethanol and ammonia) from sunlight harvesting and using electricity. Further, SHAPECAT focus is to understand the sensing behavior of the shape-engineered nanohybrids towards different target gases (H₂, CO₂, CH₄, CO, SO₂, NO₂ etc).

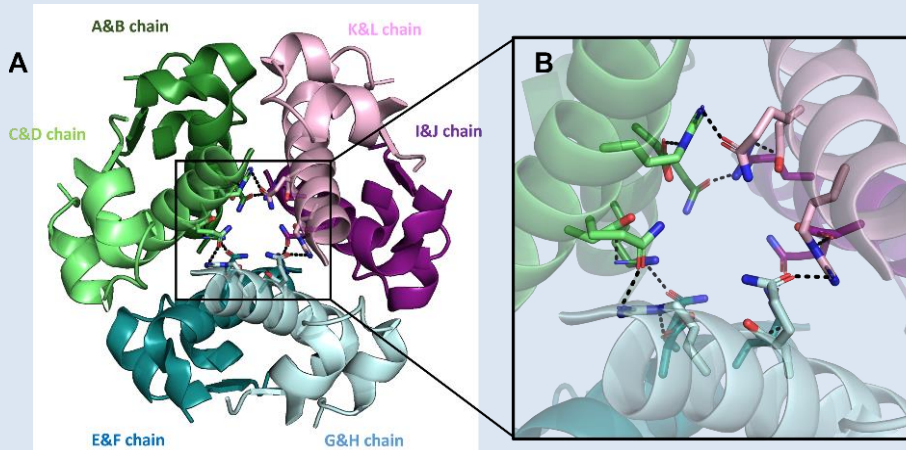
Dr. Rajib Kumar Singha started his "NANOCAT" group in August 2022 at PPISR, Bengaluru. The group mainly focuses on alternative fuel production like clean hydrogen, methanol, ethanol etc. using Heterogeneous catalysts. Other areas of interests are small molecules activation for different environmental and energy applications. Environmental concerns are big issues of debate and research nowadays, not only in India bur worldwide. So, focus of the NANOCAT group's research is also on same direction. Recently, a PhD student Mr. Manoj Prakash has joined in the group.

Research Highlights – Theoretical Sciences Division

Dr. R Srikanth's group has explored aspects of non-Markovianity, and non-invertibility of open system effects, counterfactuality and indistinguishability in quantum cryptography. Additionally, the possibility is being explored of relativistic effects in quantum information processing. Other new avenues of research include the potential for noisy intermediate-scale quantum (NISQ) devices used for variational quantum eigensolvers applied to density functional theory (DFT) type problems. Our most recent student, Ms Charu Gupta, registered for her PhD with MAHE on Jun 27, 2022. Senior student Mr Vinod Rao is now poised to submit his PhD thesis, based on his work on various aspects of quantum cryptography. There were 6 publications from the group, in journals such as Phys. Rev. A and Quantum Information Processing, including work with our PhD students as well as national and international collaborators.

Dr. Sujit Sarkar's group works on topological state of matter, quantum field theoretical method to quantum many-body systems and quantum field theoretical aspect of interacting disorder systems. Currently, two PhD students from his group Ranjith Kumar R and Y. R. Kartik, work on different aspects of the quantum matter problems. The current research interest of his group is to find the relations of bulk-boundary correspondence for Hermitian as well as non-Hermitian systems and the method of curvature renormalization group for multicritical points. His group has also solved the problem of non-Hermitian quantum field theory. The research publications of his group have appeared in the journal such as Phys. Rev. B and Nature Publication Group. His group is involved in active collaborations with other leading groups of India as well as abroad.

Research Highlights – Biological Sciences Division



(A) Hexameric structure of zinc-free insulin (B) inset showing the interactions that compensates for loss of zinc.

Dr. Ramagopal's group at biological sciences division works on structure-function relationship of biologically important proteins. The structure of proteins, protein-ligand and protein-protein complexes are determined by X-ray crystallography. The insights gained from the structural studies are assessed using other biochemical, bioinformatics biophysical techniques. For example, the figure in the left depicts the structure of a zinc-free hexameric insulin, which is a result of evolutionary studies, sequence analysis, mutational studies and structural and functional analysis of mutants, including their ability to support glucose uptake.

This zinc-free insulin showed all potential to become a lead molecule to treat diabetic patients including those with zinc allergy. We together with Dr. Ananda's group have recently applied for Indian patent on this novel zinc-free insulin. Other aspects of our research is in the area of immune receptors. The aim is to rationally design and create potential lead molecules for T-cell checkpoint blockade cancer immunotherapy. One of such attempts resulted in very high affinity PD-1 mutant and we are in process of patenting these mutants. We also works on enzyme-ligand/substrate complexes and on the preferential association of cell surface receptors to understand the signaling mechanism. Overall, we have contributed around 30 protein structures to Protein Data Bank, and we have contributed publications in different areas, such as, methodology development in structural biology, design of immune receptors to mimic the function of antibody and also provided novel model in which we argue supramolecular arrays of these receptors control signaling.

Dr. Ananda K and his research group in the year 2022 mainly focused on modifying the insulin and their bio-conjugation to develop an advanced insulin analog for the applications in controlling diabetes. Along with Dr. Ramagopal group have developed a few new analogs of insulin with genetic modification on the insulin gene. One student working on natural inhibitors from medicinal plants and their endophytic fungi for alpha glucosidase enzyme inhibition obtained PhD degree in 2022. We have identified some inhibitors of alpha glucosidase enzyme which are characterized and published in prestigious journals. Another student submitted her PhD thesis to MAHE Manipal for the award. The group has published six publications in well recognized journals during the year, some of these publications were came from the productive research collaborations with other prestigious Institutions. This year two new students joined for the PhD under this group and many research publications and interesting findings are going to come from this group soon..

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Book Chapters

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Poornaprajna Analytical Center

Instruments available for external users for sample analysis

Chemisorption instrument [TPD (NH₃/CO₂), H₂-TPR, N₂O-Chemisorption, BEL]; Physisorption instrument (BET Surface area, porosity, BEL); X-Ray Diffractometer (Bruker); FTIR Spectrophotometer (Bruker); Atomic Absorption Spectrophotometer (Perkin Elmer); UV-Vis Spectrophotometer (Perkin Elmer); Fluorescence Spectrophotometer (Agilent); Simultaneous Thermal Analyzer (TGA-DTA, DSC Perkin Elmer); Mechanical property testing (Grain crush strength; Attrition resistance).

Highlights of Research Activities

Best presentation awards

1. Mr. Ranjith Kumar won Best Presentation Award from DAE for the work "Topological Phase Transition at Quantum criticality" during the 65th DAE Solid State Physics Symposium 2021 (DAE-SSPS 2021) held at DAE convention center, Anushaktinagar, Mumbai during December 15-19, 2021.
2. Ms. Chethana Aranthady won Best Poster Award in prestigious "12th Bengaluru India Nano 2022" for her work on "Selective SO₂ detection at low concentration by Ca substituted LaFeO₃ thin film sensor" organized by The Dept of IT, BT and S&T, Government of Karnataka in association with Karnataka's Vision Group on Nanotechnology virtually during March 7-9, 2022. She was among the 11 recipients out of 230 poster presentations across India.
3. Ms. Vaishnavi B.J. won Best Oral presentation award for her presentation on "Synthesis of furfuryl acetate from furfuryl alcohol over solid acid catalysts: Investigation of active sites using DFT Studies" at the 4th National Conference on "Emerging Trends in Chemistry and Material Science-(ETCM-2022)" from 24-26, March 2022 through offline mode organized by Department of Chemistry, KLS Gogte Institute of Technology, Belagavi.
4. Ms. Chaitra Mallannavar won Best Poster Award in a one-day National Conference on, "Recent Advances in Chemical Sciences" at J.S.S Arts, Science and Commerce College, Gokak sponsored by Karnataka Science and Technology Academy (KSTA), Government of Karnataka, on 23rd July 2022. She presented her work on "Chemical fixation of CO₂ by converting into cyclic carbonate via cycloaddition reaction with styrene oxide using mixed metal oxide dispersed silanol rich mesoporous SBA-15 catalyst"

PhD awarded

Dr. Swetha Lankipalli

Title of the thesis: Structure guided modification of B7-1 and B7-2 for potential use in immunotherapy and novel insights on B7-2 oligomerization.

Date of award: January 10, 2022.

Guide: **Dr. Udupi Ramagopal**



Dr. Marilyn D'Mello,

Title: Design and Development of Metal-Organic Framework based Materials for Gas Sensing Applications. Date of award: October 1, 2022.

Guide: **Dr. Ganapati Shanbhag**



Dr. Rahul Sharma.

Title: Studies on Edged States on Hermitian and Non-Hermitian Topological Systems

Date of Award: August 9, 2022.

Guide: **Dr. Sujith Sarkar**



Dr. Kirana MP,

Title: Studies on alpha-glucosidase inhibitors isolated from medicinal plants and their endophytic fungi.

Date of Award: June 29, 2022.

Guide: **Dr. Ananda Kulal**



National level awards

Mr. Ranjith Kumar received **AWSAR** (Augmenting Writing Skills for Articulating Research) **award** for the best science story titled "Edge States: an enigmatic story in physics" from DST, Gov, India, announced on February 28, 2022, on National Science Day.

Mr. Karthik received **Dr. KV Rao Research Award** in Physics category and secured the runner-up 1 position which includes Rs. 10,000 award cash and certificate. he event is held annually to promote scientific research and encourage young scientists to continue their career in basic sciences.



New positions for Ph.D. alumni of PPISR

This year, a few alumni of PPISR got prestigious positions in Government and private organizations. Dr. Swetha Lankipalli and Dr. Kempanna Kanakikodi joined as a Forensic Scientist, Govt. of Andhra Pradesh and Govt. of Karnataka respectively. Dr. Pavithra GC., moved to University of IOWA, USA as a post-doctoral fellow. Dr. Archana moved to Seoul National University, South Korea as a post-doctoral fellow. We are happy to see this trend that students who finished PhD at PPISR are securing distinguished positions on the globe even in the difficult times that the world is facing

Highlights of Research Activities

- ❖ Overall, 12 sponsored projects from industry and Govt. agencies were executed at PPISR in the year 2022.
- ❖ Students and faculty members attended various national and international conferences and four students received oral/poster presentation awards.
- ❖ A publication from Dr. Ramagopal's group, on the structure and function of an MTB cell surface protein has been highlighted in the "Elettra news highlights"- <https://www.elettra.eu/images/Documents/SCIENCE/Elettra%20HL%202022.pdf?v2>
- ❖ Ms. Chethana Aranthady submitted her PhD thesis titled "Design of Semiconductor Oxide Nanomaterials for Efficient Gas Sensors" to Manipal Academy of Higher Education, Manipal for the award of Ph.D. degree on September 30, 2022. Guide: Dr. Nalini G Sundaram and Co-Guide Dr. Ganapati V Shanbhag.
- ❖ Mr. Shankar Kundapura, Biological Science Division, presented pre-PhD thesis colloquium on his thesis titled "Rational modification of immune checkpoint receptors of PD-1 pathway for cancer immunotherapy" on 29th September 2022; Guide-Dr. Udupi A. Ramagopal.
- ❖ Ms. Shrilakshmi S, Biological Science Division, presented pre-PhD thesis colloquium on her thesis titled "Rational modification of insulin driven by evolutionary studies and chemistry for therapeutic applications" on July 22, 2022, and submitted her thesis to MAHE, Manipal in the month of December 2022; Guide-Dr. Anada Kulal.
- ❖ Mr. Vinod N and Mr. Ranjith Kumar of Theoretical Sciences Division, presented Pre-PhD colloquium..
- ❖ Mr. Y R Kartik, Theoretical Sciences Division, presented Pre-PhD colloquium on his thesis titled "Criticality, Geometry and topological transitions in Hermitian and non-Hermitian systems" on July 14, 2022, and submitted the thesis to MAHE, Manipal on 29th December 2022. Guide: Dr. Sujith Sarkar.
- ❖ Dr. Maradur gave an invited talk at the "Fourth National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2022)" organized by Internal Quality Assurance Cell, Bharati Vidyapeeth, Sangli on 21st January 2022.
- ❖ Dr. Maradur gave an invited talk at the "National Symposium and Quiz Competition in Chemistry" on 19th March 2022 organized by Sadguru Gadage Maharaj College, Karad, Maharashtra.
- ❖ Dr. Srikanth gave a talk on "Basics and Information Theory and quantum cryptography" at Marathwada Mitra Mandal's College of Engg, Pune on March 21, 2022
- ❖ Dr. Srikanth presented a seminar on device-independent cryptography in operational quantum mechanics and generalized probability theories National Conference on Contemporary Mathematics and Applications (NCCMA 2021) at D. G. Vaishnav College, Chennai on 23rd October 2021.
- ❖ Dr. Ramagopal reviewed the thesis from NISER Bhubaneswar and Indian Institute of Immunology, New Delhi and conducted the viva-voce examinations.
- ❖ Dr. G. V. Shanbhag evaluated PhD theses from Jain University and Mumbai University and conducted the viva-voce examination
- ❖ Dr. G. V. Shanbhag gave an invited lecture as Resource Person at prestigious 4th National Conference on "Emerging Trends in Chemistry and Material Science - (ETCM-2022)" from 24-26, March 2022 through offline mode organized by Department of Chemistry, KLS Gogte Institute of Technology, Belagavi.
- ❖ Dr. G. V. Shanbhag gave an invited lecture as Resource Person for Faculty Development Programme organized by Dept of Chemical Engineering, Dayananda Sagar College of Engineering, Bengaluru on March 16, 2022, on "Catalysis and its role in green synthesis of fuels and chemicals: Present challenges.
- ❖ Dr. G. V. Shanbhag gave an invited lecture as Resource Person for VGST sponsored Faculty Development Programme on "Materials for Energy Applications organized by Dept. of Applied Sciences at New Horizon College of Engineering, Bengaluru" held on 9th April 2022.
- ❖ Dr. G. V. Shanbhag was inducted as member of Board of Studies in Chemistry by RV College of Engineering in 2022.
- ❖ Dr. Ananda K gave an invited lecture at Department of Biotechnology, REVA university, Bengaluru on "Modifications of therapeutic proteins for their advanced applications" on March 22, 2022
- ❖ Dr. Maradur gave an invited talk at the Daltons Society meeting organized by SB Arts and KCP Science College, Vijapur, Karnataka on 23rd June, 2022.
- ❖ Dr. Sujit Sarkar presented a webinar on "Topological quantum criticality in non-Hermitian extended Kitaev chain" in the common platform of Oxford and Cambridge University (PHQPH)
- ❖ Dr. Ramagopal gave an invited lecture titled "Supramolecular organization of cell surface receptors: A new model of cell surface organization and signalling" at the 49th National Seminars on Crystallography co-organized by Indian Crystallographic Association and Jammu University on 28th November 2022.
- ❖ Dr. Ananda evaluated a thesis from Shivaji University and conducted the viva-voce examination
- ❖ Dr. G. V. Shanbhag evaluated PhD thesis from Jain University and Mumbai University and conducted the viva-voce examination
- ❖ Ms. Vaishnavi BJ, Material Sciences and Catalysis Division, presented pre-PhD thesis colloquium on her thesis titled "Designing novel catalysts for conversion of biomass derivatives furfuryl alcohol and levulinic acid into value added chemicals" on June 28, 2022; Dr. G. V. Shanbhag .
- ❖ Dr. Ramagopal has been inducted as the treasurer of Indian Crystallographic Association.

Highlights Activities in the institute

First visit of our new Chairman H H Sri Eeshapriya Theertha Swamiji

Swamiji made his first visit to PPISR on January 20, 2022, after becoming Chairman of AMEF. Prof K Srihari welcomed H H Swamiji, and the director Prof. Anand B. Halgeri briefed the history of PPISR starting from the days of Founder Chairman H H Sri Vibudhesha Theertha Swamiji with ambitions to conduct world class research and hence to contribute to the society. He also briefed their dream to establish PPISR as a 'Centre of Excellence in Science' and the unconditional support and freedom given by H H Sri Vishwapriya Theertha Swamiji to achieve the dreams of His Guru H H Sri Vibudhesha Theertha Swamiji. Prof Srihari also requested H H Sri Eeshapriya Theertha Swamiji to provide all his support and encouragement and to provide new direction for the growth of this Institution. Subsequently, Dr. Anand B. Halgeri, Director of PPISR gave a detailed presentation of PPISR on various activities carried out for the last 12 years. On this occasion, H H Sri Eeshapriya Theertha Swamiji released the Newsletter and Annual report of PPISR and distributed prizes and merit certificates for academic activities as well as sports. H H Eeshapriya Swamiji also appreciated the overall efforts of faculty members and students for bring up to this level of pride to the Institution.



Celebration of 73rd Republic day

H H Eeshapriya Theertha Swamiji was the guest of honor on the day of celebration of 73rd Republic Day, 2022. H H Swamiji hoisted the flag



Inauguration of 4th Edition of PPISR Activity Forum



The chairman of the institution inaugurated the 4th edition of PPISR Activity Forum on 26th January 2022.

Visit of Prof. Gopinath

Dr. C. S. Gopinath, Outstanding Scientist and Deputy Director, NCL-Pune visited PPISR and delivered a talk titled "Key Issues in Solar Water Splitting and Possible Approaches to Tackle Them".



Research highlights- Materials Science & Catalysis Division

The quarterly Meeting of the Board of trustees of AMEF was held on November 12, 2022 at the Sadashivanagar office premises in the presence of the Chairman, trustee members and invitees Also the Annual Report for the year 2021-22 was released by the Chairman- AMEF during the meeting.



Visit of Prof. Dr. Christof Wöll, Karlsruhe Institute of Technology (KIT), Germany



Title of the talk: Date-December 1, 2022. Programmed Assembly of Functional Molecular Solids from Building Blocks: The SURMOF Approach.

Highlights of Activities in the institute

National Science Day Celebration at the Bidalur Campus



The National Science Day was celebrated on March 3rd, 2022 at the Bidalur Campus. A programme was organised with an invited lecture by the chief guest Dr. G. Parthasarathy

began with an invocation followed by lighting of the lamp. The Director of the institute Dr. Anand B. Halgeri delivered the inaugural speech and welcomed the guest and the gatherings. The students of PPISR from all the three divisions gave talks on various subjects such as “Indian Metallurgy: From Ancient Indian Context to New Age Nano Systems”, “Mysterious half-spin of the Electron”, “Identity testing” and “G.N. Lewis and the Nobel Prize”.

Research Orientation Workshop for the students of St. Aloysius College



Research Orientation Workshop in Chemistry (ROWIC) was organized at Bidalur Campus on April 04, 2022 for the students and faculty members of the St. Aloysius College, Mangalore. Dr. Ramaesh, registrar, Reva University was the guest of honor and inaugurated workshop. The objective of this weeklong workshop was to provide hands-on-training on various advanced instruments available at PPISR. The hands-on session were preceded by various lectures from research scholars and Faculty members. The topics including, instrumental techniques of AAS, UV and FTIR, GAS Chromatography, N₂ sorption, TPD, X-Ray crystallography and TGA analysis were covered. The concepts and applications of catalysts, nanomaterials, metal organic frameworks(MOFs). computational chemistry are the various topics covered in these lecture series. The valedictory function was organized on the last day of the workshop. Prof. V. Jayathirtha Rao, Emeritus Scientist – CSIR-IICT, Hyderabad and Hon. Professor at AcSIR was the chief guest

H H Eeshapriya Theertha Swamiji's Visit to JNCASR



H H Shree Eeshapriya Theertha Swamiji visited JNCASR on May 26, 2022 to have a glimpse of the centre and to meet Bharat Ratna Prof. CNR Rao, the former president of JNCASR. He met Prof. CNR Rao and the director Dr. Halgeri honoured Prof. CNR Rao and Mrs. Rao in the presence of Swamiji. Later Swamiji went around the laboratories and interacted with the scholars and scientists of JNCASR. H H Sri Swamiji also visited the Gallery of Prof. C.N. R Rao and was very much impressed with awards and recitation display at the gallery and overall scientific contribution of JNCASR to the country.

Recruitment research scholars and project fellows- 2022

Around 10 students have been selected as Junior Research Fellows in the year 2022 towards PhD program and several project trainees have joined the institute to conduct research in various industrial and academic projects.

PPISR Welcomes New Faculty members



Dr. Naresh Nalajala
Assistant Professor

PhD: IITB-Monash Research Academy
Postdoc: NCL-Pune (as NPDF and Pool Scientist)

Research: Facet engineering, Electrocatalysis, Photocatalysis



Dr. Rajib Kumar Singha
Assistant Professor

PhD: CSIR-IIP Dehradun
Postdoc: Kyushu-Japan, IIP-Dehradun, Trinity Univ, USA, IISER-Tirupati SERB-NPDF, JNCASR

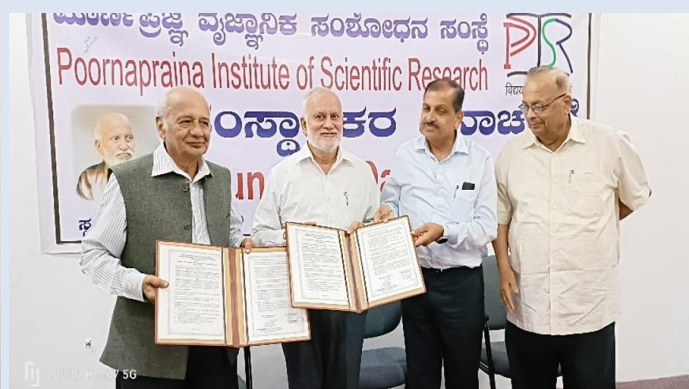
Research: Catalysis, Green Fuels & Small molecule activation

Highlights of Activities in the institute

Founder's Day Celebration and the scientific session

As usual Founder's Day 2022 was celebrated with great enthusiasm with several invited lectures from the accomplished scientists on 7th July 2022. Prof. Padmanabhan Balaram, (Ex. Director of IISc) was the chief guest of the inaugural function.. Prof. Balaram gave a mesmerizing keynote lecture covering history of curiosity driven science. Following which Prof. Ramagopal presented overview of research in Biological Science Division of PPISR. The first session had two talks from the invited speakers namely Prof. Deepak Nair on "Nanoscale regulation of Ca²⁺ dependent phase transitions and real-time dynamics of SAP97/hDLG", followed by Prof. Dinesh A. Nagegowda on the topic "Demystifying the biosynthesis and regulation of specialized metabolites in certain medicinal and aromatic plants". In the afternoon a session on Theoretical Sciences, the first lecture was delivered by Prof. Sisir Roy on "Noise, coherence and meditation: challenges to modern sciences" followed by lecture from Prof. Sateesh R. S. on "Symmetries in the standard Model".

The second day (08.07.2022) began with the overview of PPISR and Materials Science Research by Associate Professor and HOD Dr. Ganapati V. Shanbhag of PPISR followed by two lectures on "Magneto electric Multiferroics" by Prof. A. Sundaram and "Soft-Nano Composites: Functional materials aiding dreamy invisibility technology" by Dr C. V. Yelamaggad. The afternoon session was the valedictory function for which Prof. S. Ayyappan, Chancellor, Central agricultural University, Imphal and Chairman, Karnataka Science and Technology Academy, Bengaluru was the chief guest and Dr. Rajeshwar Dongara, Director, SABIC Research and Technology Centre, Bengaluru was the Guest of Honour. The Director welcomed the guest, while the Hon. Secretary of PPISR/AMEF made the opening remarks about PPISR followed by addressing of the guests. An MOU between KSTA and PPISR was also signed on the same day



A day at the lab for high-school students



PPISR has been conducting Outreach Research Orientation Programme for students of Poornaprajna Education Centres annually to inculcate and kindle scientific interest in young minds. The idea is demonstrate simple but exciting experiments that the students of high-schools can perceive and have a look at the research labs and available facilities. Everyday, more than 100 students visited the institute starting from July 25 till July 30, 2022. This year, Class "X" (Ten) students and science teachers of all the schools participated with enthusiasm and shown interest for science.

His Holiness Sri Vibudhesha Theertha Swamiji Enodwment lecture



The 3rd "His Holiness Sri Vibudhesha Theertha Swamiji memorial endowment lecture" was delivered by a renowned scientist and the Director of Centre for Nano Soft Matter Sciences (CeNS), Bengaluru. He delivered a talk titled "A Chemist's perspective on Nanomaterial Synthesis: How to bridge the gap between Laboratory and the Market?" on 13th October 2022.

Director of the institute Dr. Anand B. Halgeri, gave a tribute to the great soul H H Sri Vibudhesha Theertha Swamiji. Dr. K. Srihari, Hon. Secretary of AMEF/PPISR emotionally spoke on Swamiji's Vision and Mission for Science. During the benediction from the present chairman H H Eeshapriya Theertha Swamiji, recalled the efforts of the founder chairman in setting up this scientific institute and his visions for science

Highlights of Activities in the institute

PPISR Signs MOUs with Reva University, GITAM University and KSTA



Dr. N Ramesh, the Registrar of REVA university and Dr. A. B. Halgeri, Director, PPISR signed a Memorandum of Understanding (MOU) on 4th April 2022.



Registrar of GITAM Deemed to be University, Mr. D. Gunasekaran and PPISR director Prof. A. B. Halgeri Director, PPISR signed a Memorandum of Understanding (MOU) on 25th November 2022.

Successful completion of the industry sponsored projects



An industry project sponsored by GTC Vorro Environmental Services LLC, USA on “Development of adsorbent materials for sulfide removal” was successfully completed in December 2022 by Dr. Ganapati Shanbhag and his group. Another project on “Catalyst and process development for aromatics alkylation to make higher aromatics” sponsored by Deepak Novochem Technologies Ltd. (DNTL), Pune for the period of 1 year was also successfully executed by Dr. Shanbhag as Principal Investigator. Executive Directors of DNTL Sri Shreekrishana Sawant, Dr. Anand Hunoor, Sri Shripad Gumaste visited PPISR for project review meeting on August 18, 2022 and expressed their satisfaction on the outcome of the project

Visitors' Views

Dr. G. PARTHASARATHY, FAN, FRSC, FTAS. FISSA, Adjunct Professor, National Institute of Advanced Studies.: Wonderful experience in having academic interactions with young faculties and enthusiastic students. May lord Krishna bless the young faculties, staff and students with many more success and productive years ahead. I am most grateful to Professor Dr. Anand Halgeri, Director for his kind invitation to the National Science Day celebrations. My warmest regards.

Dr. N RAMESH, Registrar, REVA University: A great research institute doing yeoness services to the society through research activities. The involvement of all scholars is amazing under the blessings of Admar Mutt Foundation and the dynamic stewardship of Dr. Anand B. Halgeri sir. Kudos to PPISR. They deserve all encouragement. Warm Regards.

Dr. V. JAYATHIRTHA RAO, Emeritus Scientist and Hon. Professor AcSIR, CSIR-IICT: Institute is located in a very nice place, which provides thought process. Students are energetic and involved in their work. The driving force is by the Hindu philosophy coming from visionaries. A fantastic place to work for many young researchers. Cool interactive environment is just superb.

Prof: VISHWESHWARA RAO, REVA University: Excellent research institute with great facilities for the research in the fields of Chemistry, Catalysis, Biology and the leadership driven by Prof. Anand Halgeri is an exemplary. The team for Chemistry and Biology has zeal towards high impact research which gives outcome in good impact publication and also great nation building through training best students.

Prof: N. D. HARIDASS, Former Director of PPISR and Retired Professor, INSTITUTE OF MATHEMATICS, Chennai: Once again it was a visit full of nostalgia and admiration for the enormous progress made at PPISR in all directions. Thanks to all and Dr. Anand Halgeri for a warm and touching welcome.

Dr. S. MURTHY SHEKHAR, Prof & Head, Chemical Engineering, Siddaganga Institute of Technology, Tumakuru: I visited PPISR for the first time. I really appreciate the research work going on in the campus and also the support and friendly environment of the campus. The research knowledge shared by the eminent scientists is really commendable and is needed for the upliftment of the society.

Dr. C.S. GOPINATH, Deputy Director and Outstanding Scientist, CSIR-National Chemical Laboratory, Pune: What a place to visit. PPISR in the midst of tranquil nature and I could smell fresh oxygen. All scientific programs are focused, and faculties are young and energetic. Very glad to know the contributions to the industrial catalysis aspects. I wish many more such progress to PPISR with many able faculties. I have no doubt that PPISR will make a mark in science very soon. I wish PPISR all the very best.