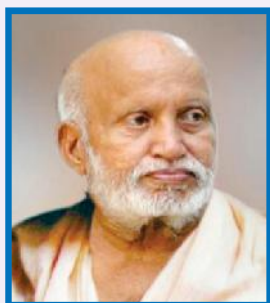


POORNAPRAJNA INSTITUTE OF SCIENTIFIC RESEARCH

(Recognised by Department of Scientific & Industrial Research (DISR) and Manipal University)

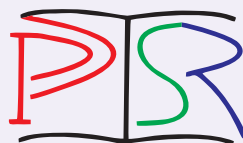
PROMOTED AND MANAGED BY ADMAR MUTT EDUCATION FOUNDATION,



(1920 - 2009)

His Holiness

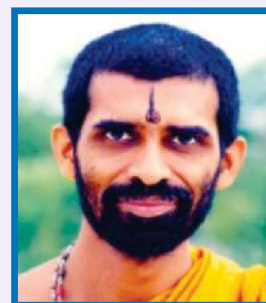
Sri Vibudhesha Theertha Swamiji
Founder



विद्यया विन्दते अमृतं

VISION

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



His Holiness

Sri Vishwapriya Theertha Swamiji
Chairman

NEWSLETTER

Volume III

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Issue 002



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FROM THE DIRECTOR'S DESK.....

Dear All,



Let me wish all the readers a Happy New Year 2013 and we look forward our journey for a peaceful, prosperous, healthy and fruitful New Year. We have been able to consolidate many of our academic activities in terms of completion of course work for Ph.D. students who got registered with Manipal University. As per the guidelines of DSIR, we have constituted a Research Advisory Committee at PPISR under the Chairmanship of Dr. Prahlada, VC, DIAT, Pune and other eminent scientists as distinguished members.

The Institute has made a significant progress in terms of getting sponsored research projects from Industry. Based on our successful completion of the project, M/s. GTC Technology, USA has extended the project for one more year on catalyst development for aromatics production. Similarly, M/s. Shell Technology India and Hindustan Petroleum Corporation Ltd Corporate R&D Centre have also sponsored research projects on the development of catalyst for hydrocarbon conversions. In addition, our faculty members have received DST sponsored project in the area of Theoretical Sciences.

Our Institute has published more than 15 research papers in internationally reputed journals. Based on our ongoing research projects, our faculty members and research scholars have all attended various National and International conferences and have won best presentation awards. Several distinguished Professors and scientists from both India and abroad visited our Institute and have given lectures.

On the whole, last year was most fruitful and eventful year. I would like to express my sincere gratitude to Admar Mutt Education Foundation management and also H H Sri Vishwapriya Theertha Swamiji for their extended support, encouragement and guidance.

Dr. A.B.Halgeri
Director

EDITORIAL



It is my pleasure to be associated with Poornaprajna Institutions managed and promoted by Udupi Admar Mutt Education Foundation. Being a faculty member of this unique Institute I am very happy to be the editor of this newsletter. The founder H H Sri Vibudhesha Theertha swamiji had devoted his whole scientific thoughts in constructing and supporting of this Institute. In view of founder Swamiji's bright vision like every year we have celebrated Founders Day on July 5th and 6th. All the scientific community of the PPISR presented their research achievements for the last one year and distinguished scientists like Dr. Prahlada, Dr. Rangappa and Dr. Raj Mohan addressed the gathering on this special occasion. The blessings of H H Sri Vishwapriya Theertha Swamiji doubled the spirit of PPISR community for further achievements. This Institute under the direction of our Director Dr. Halgeri AB has made tremendous achievements in the last two and half years. In a nut shell: Institute is recognized by DSIR and Manipal University, eligible faculties became recognized guides, over ten research scholars got registered under Manipal University for Ph.D., more than 10 million rupees industrial and government research grants has sanctioned to PPISR. I would say 2012 was an successful year for PPISR. Further, all the faculty members who are collaborating with expert scientists from established research Institutions shows bright future of success in coming years. National and international scientists from different research fields were invited to PPISR to share and discuss possible research collaborations and also to find out the hotspots in their respective fields. Our aim is to see shining PPISR soon in the world map for scientific achievements. I hope the events and activities of PPISR presented in this newsletter may inspire the readers.

Dr. Ananda

AMEF BOARD OF TRUSTEES MEETING



The meeting of board of trustees of AMEF was held at Bidalur campus on November 26, 2012. Dr. K Srihari, Hon. Secretary. AMEF/PPISR welcomed the Chairman and all members of the Board. Many issues from minutes of the previous meeting, such as balance statements, ratification of resolutions passed earlier were discussed and adopted. The board appointed the Statutory Auditors for the year 2012-13. During the discussion, trustees advised to have a

Research Advisory Committee (RAC) and to have two meetings in a year. Director presented the quarterly Progress Report of PPISR and it was appreciated by the trustee members alongwith the Chairman. The Chairman of PPISR H H Sri Vishwapriya Teertha Swamiji released the newly designed Web site of PPISR and also the Annual Report.



PPISR FOUNDER'S DAY CELEBRATION 2012



PPISR Founders Day was celebrated on 5th and 6th July, 2012 at Bidalur campus. The scientific program on 5th July was inaugurated by Prof. G.U.Kulkarni, Chemistry and Physics of Materials Unit, JNCASR, Bangalore. He gave the keynote address and opened the session for scientific discussion. For the next one and half days, all faculty and research scholars from all divisions of PPISR presented their research progress for the last one year. Dr.K.K.Nanda, Professor of MRC division, IISc, Bangalore chaired Materials Science division on July

5th, 2012. Second day on July 6th, 2012, Dr. P.K. Rajagopal, Retired Professor of Botany from MGM, College Udupi chaired Biological Sciences Division and Dr .Jagadev Singh, IAA, Bangalore chaired Theoretical Sciences Division.



Valedictory function was arranged at the Bidalur campus on the evening of 6th July. Dr. Prahlada, Vice Chancellor, Defence Institute of Advanced Technology, Pune was the chief guest on the occasion. Dr. Rangappa KS, Vice Chancellor, Open University Mysore and Dr. Raj Mohan, Deputy Director, ICMR, Bangalore were the guest of honors present on this occasion. The chairman of PPISR/AMEF HH Sri Vishwapriya Theertha Swamiji presided over the occasion.

The chief guest expressed the importance of Science for today and its benefits for the mankind. HH Sri Swamiji released the brochure of PPISR and the newsletter for the period of Jan-Jun 2012 on the occasion.

HH Sri Swamiji addressed the gathering and the programme was concluded with his benediction. The large gathering on the occasion had many of the board of trustees and management members of AMEF and AMEC, honorary/adjunct professors of PPISR, other distinguished invitees and well wishers.



RESEARCH ACHIEVEMENT AWARD



The first phase of industrial project sponsored by GTC Technology, USA was successfully carried out at PPISR. To acknowledge the milestones achieved by Dr. Ganapati Shanbhag's group, Dr. Ding ZhongYi of GTC, Technology, USA awarded a plaque to the achievers during his visit to PPISR on July 15, 2012. The plaque states "Presented to Dr. Ganapati Shanbhag and his students Mr. Vijay Marakatti and Mr. H. Laxminarayan Janardhan in recognition of their dedicated research in developing a modified zeolite catalyst enabling continued commercial exploration of this important aromatics technology. GTC technology is grateful for the full support of PPISR management

and looks forward to our long term relationship."

AMEF also felicitated Dr. Shanbhag and his research group by presenting "Meritorious Award for Excellence in Research" on Founder's Day is celebrated on July 6, 2012 in recognition of the contribution towards the research and development at PPISR.



VISIT BY RELIANCE INDUSTRIES TEAM FROM JAMNAGAR



Reliance Industries Ltd, a leading refinery and petrochemicals company in India, works on the development of petrochemicals and refinery catalysts at Jamnagar and at other locations. The team headed by Dr. D. Rajeshwar Dongara, Asst. Vice President, visited PPISR in November 2012. They were impressed by the research activities and the catalyst preparation/ characterization and testing facilities at PPISR. The Reliance team discussed the possibility of sponsored research programme and also using the research facilities available at PPISR for their R & D work.



INVITED LECTURES BY SCIENTISTS



● Dr. Thomas Proffen, Director, Neutron Data Analysis and Visualization Division, Oakridge National Laboratory (ORNL), Tennessee, USA delivered a lecture on "Structural Characterization of Complex Materials using Total Scattering" on September 5, 2012.

● Dr. Jagjit Nanda, Scientist, from ORNL, Tennessee USA delivered a lecture on "High Energy Electrodes and 3D Architectures for Advanced Lithium Batteries and Beyond" on September 12, 2012

● A lecture by Dr. Vilas Shirhatti, President-Technical of Birla Research & Life Sciences, Mumbai on September 24, 2012 on the topic "Science for the benefit of consumers".

● Dr. Mahesh K.K. Scientist from Materials Research Center, Faculdade de Ciencias Tecnologia, Portugal gave a talk on "Ni-Ti Shape Memory Materials and their Characterization" on October 1, 2012.

● Dr. T. S. Suryanarayanan, Director of Vivekananda Institute of Tropical Mycology (VINSTROM), Chennai visited PPISR on October 8, 2012 and gave a talk on "Biodiversity in Amazon forests"



● Dr. Shyamaprasad, Asst. Professor from Life Science Centre, Manipal delivered a Lecture on "Introduction to nano-biotechnology" on November 2, 2012.

● Dr. Nagendra, Professor & HOD of Biotechnology, MVIT Engineering College Bangalore delivered a lecture on "Essential Bioinformatics for Biologists" on November 7, 2012.



PROGRESS IN RESEARCH AT PPISR

THEORETICAL SCIENCES

This division is working on Quantum Criticality of Geometric Phase of Optical Micro Cavity Arrays. The studies shows that the behavior of the geometric phase behaves differently in photonic super fluid phase from the staggered photonic insulating phase. The group has predicted XX criticality for the geometric phase. Where as in the study of quantum correlation functions is the most important part of the quantum many body system. The physics of optical micro cavity arrays reflects the physics of strongly correlated system.

Progress has also been made in this division in three independent streams: quantum cryptography, quantum noise and foundations of quantum mechanics. A generalization of the Goldenberg-Vaidman quantum key distribution protocol from single quantum systems to multi-partite systems has been obtained. They also have developed a new method to generalize the operator-sum representation for large dimensional noisy quantum systems, for which the traditional derivation via diagonalization of the Choi matrix may not prove possible. Further ,the group have developed a new criterion for non-classicality that is applicable to both signaling and non-signaling correlations.

Number of Publications: 2

MATERIALS SCIENCE

The catalysis group at PPISR is currently working on three industry sponsored research projects sponsored by GTC Technology, USA, Shell Technology Centre, Bangalore and Hindustan Petroleum Corporation Ltd (HPCL), Corporate R & D, Bangalore. The current research projects including glycerol transformation to value-added products such as glycerol carbonate, acetins and acrolein; Catalyst design for biodiesel synthesis from transesterification of non-edible oils such as Honge oil; Hydrothermal synthesis and pore engineering of zeolites for shape selective organic transformations such as alkylation, acylation and disproportionation; Novel catalysts for Prins reaction and photo catalysis are under progress.

In the area of polymers, research article entitled “Mixed matrix membranes of H-ZSM-5 loaded Poly (vinyl alcohol) used in Pervaporation dehydration of alcohols: Influence of Silica/Alumina ratio” was communicated to an international journal. Graphene filled sodium alginate membranes for pervaporation separation of isopropyl alcohol-water mixture work is in final stage. The work on clay filled membranes for pervaporation applications has been initiated.

The nanomaterials group has synthesized and characterized polymorphs of rare earth tungstate nanomaterials that could be tuned to exhibit photoluminescence in the visible region. One year of the DST fast track project consisting of synthesis and photocatalytic activity of Bi-based oxychloride nanoparticles is successfully completed. Synthesis of core-shell particles of carbon and gallium oxide has been successfully accomplished and characterization is in progress.

Number of publications:2

BIOLOGICAL SCIENCES

In this Division, microbiology group is further exploring for the isolation of active compounds for antimicrobial activity, anti-oxidants and antidiabetic compounds of endophytic fungi from Medicinal plants. Endophytic fungi producing bioactive compounds are taken to next step called production optimization and purification of compounds. Research grants were submitted to various government agencies based on the preliminary results achieved at PPISR.

The structural biology group successfully completed crystal structures of two enolase family proteins (i) a D-glucarate dehydratase from *Pseudomonas mendociana* and (ii) a putative glucarate dehydratase from *Acidaminococcus*. The coordinates of both the structures have been submitted to the Protein Data Bank (PDB) with PDB ids 4HN8 and 4HYR respectively. These two structures are first atomic resolution structures of proteins from PPISR and highlight the capability of PPISR to pursue macromolecular crystallography. Mrs. Pavithra G. C. has crystallized an adenine phosphoribosyltransferase (APRT) from the pathogenic bacteria *Yersinia pseudotuberculosis*.

Number of publications:2

RESEARCH ADVISORY COMMITTEE

PPISR constituted a Research Advisory Committee (RAC) consisting of eminent senior scientists for regular monitoring of the research progress. The list of committee members given below:

- Dr. Prahlada**, Chairman, Vice Chancellor, Defence Institute of Advance Technology, Pune
Prof. Aminabhavi TM, CSIR Emeritus Scientist & Cavendish Lab, Cambridge University, U.K.
Prof. Guru Row TN, Professor, Solid State and Structural Chemistry Unit, IISc, Bangalore
Prof. Krishnamurthy KR, Chair Professor in Catalysis, National Centre for Catalysis Research
Prof. Kulkarni GU, Professor, Chemistry and Physics Materials Unit, JNCASR, Bangalore
Prof. Kumar N, Emeritus Professor, RRI, Bangalore
Prof. Ramakumar S, Professor, Bio Informatics Centre, IISc, Bangalore
Prof. Rao AJ, Professor, Rajaramanna Fellow;DST, IISc, Bangalore
Prof. Sivaram C, Indian institute of Astrophysics, IIA, Bangalore
Prof. Halgeri AB., Member Secretary, Director, PPISR, Bangalore

HIGHLIGHTS OF SCIENTIFIC ACTIVITIES

Dr Prahlada Chairman of RAC reviewed research progress of faculty members on 6th November, 2012. Director presented the highlights of PPISR research activities. All faculty members presented on their ongoing projects and future research plans.

A new non-proprietary Master User Agreement between Argonne National Laboratory, Chicago USA and PPISR was signed.

Dr. Shanbhag and his team received a Meritorious Award for "Excellence in Research" from AMEF on Founder's Day July 6, 2012.

Dr. Ganapati Shanbhag visited Shenyang, China during August 16-23, 2012 to carry out project work sponsored by GTC, Technology, USA.

Dr. Bhargavi SG successfully completed the project on 'Luminsity functions of Gamma Ray Busts' sponsored by DOS/ISRO.

Dr. Bhargavi SG organised a National Lecture workshop on "Introductory Astronomy" at SDM College Ujire, Dharmasthala- during December 20-22, 2012. She also participated in Interactive session & Astro film and delivered two lectures in this workshop.

Dr. Ananda gave an oral presentation in the International conference on 'Recent Advances and Challenges in Biotechnology' (ICRACBT-2012) at NMAM Institute of Technology, Nitte, Karkala held from December 27-29, 2012

Dr. Nalini G Sundaram was invited to deliver a talk at the conference on "Condensed Matter Physics and Applications" held at the Physics Department, MIT, Manipal on December 27-28, 2012.

Dr. Raghu AV gave a talk on "Student-Scientist" interaction programme organized by Karnataka Rajya Vijnana Parishat in association with VGST on December 15, 2012 at Kollegala and on December 26, 2012 at Sirsi.

Dr. Ramagopal delivered an invited talk in the meeting at "National Seminar on Crystallography -2012" held at CLRI, Chennai.

Dr. Nalini G Sundaram and Ms. Swetha SM attended the 41st National Seminar on Crystallography (NSC 2012) held on October 8-10, 2012 at Chennai. Ms. Swetha SM was awarded for the Best Oral Presentation for her paper "Crystal Structure of Nanocrystalline Layered Bismuth Oxychlorides and Their Photocatalytic Activity"

Mr. Aravinda S presented a talk and poster in the 2nd National Research Scholar Day, IIST, Trivandrum, on "What is nonclassicality: a communication perspective", which was adjudged first in category 'Sciences'.



Dr. Nalini Sundaram and Ms. Swetha SM Participated in Indo-US Workshop on Next Generation of Materials Using Neutrons held on September 6-7, 2012 at JNCASR, Bangalore.

Vijay Marakatti, Satish B and Dr. Ganapati Shanbhag presented Poster of their research work at the 2nd International Indo-German Symposium 2012 on “Green Chemistry and Catalysis for Sustainable Development” at ICT, Mumbai from October 29-31, 2012.

Vijay Marakatti and Swetha SM presented Poster at “Second International Conference on Advanced Oxidation Processes”, Mahatma Gandhi University, Kerala, from October 5-8, 2012.

Dr. Halgeri AB and Dr. Shanbhag GV were invited for 3 day Technology Conference organized by GTC Technology, USA at Radisson Blu Plaza, New Delhi from 3-5, Dec 2012.

Mr. Janardhan HL got trained at National Orientation Program on Catalysis from November 26 to December 13, 2012 organized by NCCR, IITM Chennai

RESEARCH TRAINING FOR UNDERGRADUATES



PPISR has been inviting young undergraduates from the rural colleges who has less exposure towards fundamental and applied sciences. In one of these activities, two of the Inspire fellowship students from Poornaprajna College of Udupi and three BSc students from Bandarkar's College, Kundapur were given training in Biological Science Division in the month of November, 2012 .



NEW PPISR WEB SITE INAUGURATION



The new website of PPISR has been designed and developed by M/s KGLN Technologies Pvt Ltd. The website was released to the public on November 26, 2012 by the Chairman of Admar Mutt Education Foundation **H H Sri Vishwapriya Theertha Swamiji** at Bidalur campus.



ADDITION OF RESEARCH FACILITIES



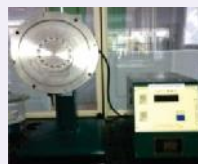
Cold Centrifuge



NH - 2L Kneader



F-26 Extruder



DGM-II Abrasion Tester



ZQJ-II Grain Crushing Strength Tester



TPD Analyzer

Poornaprajna Analytical Center

Instruments available for external users :

- XRay Diffractometer (Bruker)
- FTIR Spectrophotometer (Bruker)
- Atomic Absorption Spectrophotometer (PE)
- UV Vis Spectrophotometer (Perkin Elmer)
- Hand Held Refractometer (Mettle Toledo)

Contact :

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Email: nalini@poornaprajna.org

OR

Mrs. Latha Srinivasan

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CULTURAL EVENTS



Independence Day was celebrated at Bidalur campus by the PPISR members. Dr. Halgeri AB hoisted the flag and recalled achievements of national heroes. Mr. Sreenivas Rao P, financial advisor shared his experience on vigilance and financial management with all PPISR members.

Saraswathi Pooja and Ayudha Pooja were performed in the Bidalur campus on October 20, 2012. All the books, instruments and vehicles were decorated and worshiped on this special occasion. Priest from the nearby temple performed a systematic pooja to Saraswathi and all instruments.



NEW APPOINTMENTS



Dr. Sanjeev P. Maradur is appointed as Asst. Professor in Materials Science Division. He obtained his Ph.D in catalysis from Shivaji University Kolhapur. He worked as research scientist at Jubilant Life Sciences Ltd, Noida and had postdoctoral training from Advanced Institute of Science and Technology, Daejeon and AlanMacDiarmad Energy Research Institute, Gwangju, South Korea. Further, he was a postdoctoral research associate at Department of Chemistry and Biochemistry, Stephenson Life Sciences Research Center, University of Oklahoma, USA working on biomass refinery. He has published 10 research articles in peer reviewed national / international journals and filed for two patents.

VISITORS VIEW

Dr. Rajeshwar Dongara, *Reliance Industries Pvt Ltd, Jamnagar*

"Ambience and ambition are integrated win the Poornaprajna Institute, a noble place for scientist dreams to be associated. Thanks to Dr.ABH for providing great opportunity"

Dr. N. Lingaiah, *IICT, Hyderabad*

"A interesting place with lot of enthusiasm. The facilities are good and impressive compared to other research institutions funded by public. There is a clear scope for this institute to reach to its highest level. All the best to all the dedicated researchers working in this pleasant atmosphere."

Prof. Vilas Shirahatti, *Birla Research and Life Sciences, Mumbai*

"Very impressive set in terms of ambience, infrastructure and the great talent and high quality of research being done. In a short span of time the institute has come a long way. It certainly has a bright future".

Dr. N V Choudary, *General Manager (R and D) HPCL, Bangalore*

" Impressed with the whole place, Labs, Building architecture. The place is quite and away from city, but close to nature. Excellent work is being done at the center, useful for mankind, inline with the vision. Great experience on visitng the institute".

Prof. M S Hegde, *IISc, Bangalore*

" I felt really humble in this place. I would like to come and learn more from young scientists here".