

UGC SPONSORED NATIONAL SEMINAR ON  
'SUPRAMOLECULES AND NANOMATERIALS'

**A REPORT**

Research and development are considered as the back bone of an institution. To inculcate the tradition of research and to create awareness about the fastest emerging areas like supramolecules and Nanomaterials, the Departments' of Chemistry & Biochemistry, St. Philomena's College (Autonomous) Mysore jointly organized a UGC sponsored national level seminar on 'Supramolecules and Nanomaterials ' on 22 – 23<sup>rd</sup> of August, 2014.

The preparations for the seminar commenced well in advance by inviting resource persons who have established themselves in the above field; by inviting abstracts of the research papers for both oral and poster presentations and by forming various committees to look after the smooth conduct of the seminar.

**Theme of the Seminar**

The cutting edge research in the field of Supramolecules and Nanomaterials has given a new dimension to chemistry and unraveled the marvels of nanotechnology. It focuses on the chemical systems made of discrete number of molecular sub-units or components. While the traditional chemistry emphasizes on covalent bond, the supramolecular chemistry examines the weaker non-covalent interactions.

Biological systems often impress the research in supramolecular chemistry. Supramolecules control many biological functions; hence these molecules are exploited to synthesize large number of aggregates. Supramolecular chemistry is poised to emerge as a wide range of high tech sensors, high performance catalysts, medicinal and industrial devices. Mimicking supramolecular interactions in artificial systems has been crucial to provide fundamental understanding of many biological processes from cell structures to enzymatic functions that rely on these interactions. Supramolecular chemistry is intimately related to Nanotechnology. Many nano devices are based on the principles of supramolecular chemistry.

Hence, this seminar provided a forum for discussion on all aspects of supramolecules and Nanomaterials and foster the exchange of ideas on techniques, experiments and applications of these. All original contributions were arranged in the form of plenary, keynote, invited, oral and poster presentations.

## **Sub-Themes**

- Applications of Nanomaterials in nano medicine
- Supramolecular coordination
- Supramolecular approach towards Nanomaterials
- Applications of Bio-degradable nano particles.

## **Pre-Seminar Preparations**

The Departments of Chemistry & Biochemistry of the College sent invitations for attending the seminar to various colleges, postgraduate departments of different universities and institutes of the country in the 2<sup>nd</sup> week of July 2014. Research Papers/ Posters related to the theme were invited for presentations.

The college organizing committee met on 16<sup>th</sup> July 2014 to plan the seminar. The advisory committee, organizing committee and other committee meetings were held subsequently. An editorial board was formed for the publication of seminar proceedings which also included the abstracts received from the seminar.

The Screening committee met on 14<sup>th</sup>, 16<sup>th</sup> and 18<sup>th</sup> August, 2014 for the scrutiny of abstracts of the papers for oral and poster presentations. Five delegates were invited for oral presentations and 8 delegates were invited for poster presentations on the basis of selection of abstracts.

The Advisory committee and extended organizing committee meetings were held on 19<sup>th</sup> & 20<sup>th</sup> August to finalize the details of the seminar on 22<sup>nd</sup> and 23<sup>rd</sup> Aug 2014.

## **INAUGURAL FUNCTION**

UGC sponsored National level seminar on the topic 'Supramolecular and Nano materials' started at 10.00am in the college auditorium in the presence of invited guests and delegates. It was inaugurated with the lighting of the lamp by Prof. P. Venkataramaiah, Former Vic- Chancellor of Kuvempu University; Dr. Michael Rajamathi, Associate Professor, Dept. of P.G Studies & Research in Chemistry, St. Joseph's College, Bangalore; Rev. Fr. Dr. N.S. Marie Joseph, Administrator, St. Philomena's College Educational Institutions, Mysore; Rev. Fr. Bernard P. Barnes, Vice-Principal of the College; Prof. M. Raphael, Officiating Principal of the College and Dr. Alphonsus D'Souza, HOD of Chemistry & Biochemistry, St. Philomena's College (Autonomous) Mysore.

The inaugural function started with a prayer cum welcome song presented by students of the College.



Dr. Alphonsus D' Souza, HOD of chemistry & Biochemistry of the College welcomed the honourable guests and delegates who have come from various parts of the country. Prof. Agnes D'Souza, Associate Professor, Dept. of Chemistry & the Organizing secretary, in her introductory speech stated the purpose of organizing the seminar by highlighting the new dimensions in chemistry and to ignite a passion for research in the said field.

Former Vice- Chancellor of Kuvempu University, Prof. P. Venkataramaiah, who spoke after inaugurating the seminar said that while the 20<sup>th</sup> century belonged to Physics, the 21<sup>st</sup> century belonged to Molecular Biology and Nanomaterials. Noting that research in the field of supramolecular and Nanomaterials would provide a platform to analyse the current trends and future perspectives, he said that advancement in these fields would help in multi-disciplinary development.

Rev. Fr. Dr. N.S. Marie Joseph, Administrator, St. Philomena's College, Mysore noted that research plays a key role in the development of science and technology and called upon chemistry students to spend more time in laboratories. He also said that seminar would provide a scope for interaction and exchange of ideas between leading scientists and participants to get better understanding of these areas.

Dr. Michael Rajamathi, Rev. Fr. Bernard P. Barnes., Prof. M. Raphael and others were present. Vote of thanks was offered by Dr. Ravi J.D. Saldanha, Associate

Professor, Dept. of Chemistry. St. Philomena's College, Mysore. Miss Angelia and Miss Pearl Saldanha both I B.Sc. students of the college compered the session.

### **THE PLENARY SESSION**

The plenary session started at 11-00 am with the keynote address by Dr. Michael Rajamathi, Associate Professor, Dept. of P.G. Studies & Research in Chemistry, St. Joseph's College, Bangalore who spoke on 'Layered Solids'. Through his power point presentation, Dr. Rajamathi made a comparison of layered solids with slices of bread. He

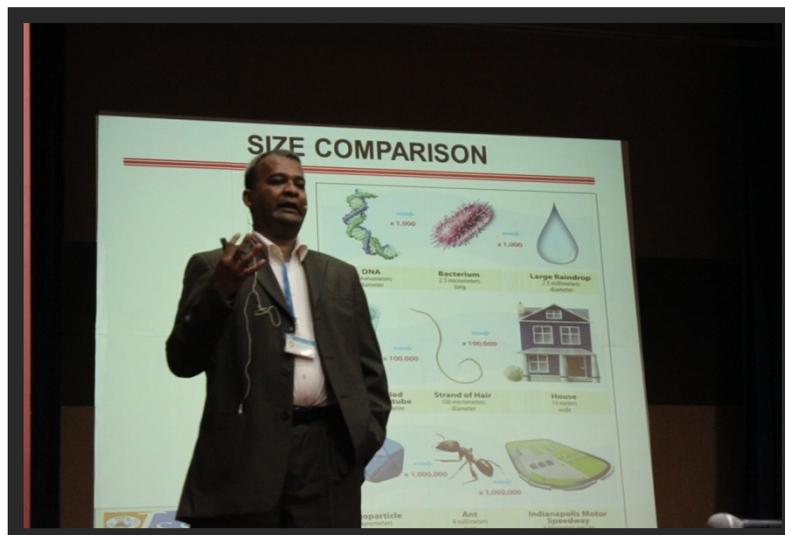
explained the classification of layered solids with suitable examples. He then spoke about Exfoliation- a phenomenon in which complete separation of layers of the materials is observed. He also explained the interesting feature of the Exfoliation of Layered solids which lead to a route for Nano materials.



Even though, the major content of the keynote address was regarding Exfoliation of solids, he also talked about Nano technology in Electronic devices and its applications in various other fields. The delegates, who were present, interacted with the speaker through questions. The session ended with concluding remarks by the speaker himself.

### **TECHNICAL SISSION-1**

The title of the Technical session was 'Application of Nanoporous Surface in Nano manufacturing and Nanomedicine'. Dr. Dattatri K. Nagesh, Professor, JSS College of Pharmacy, Mysore was the invited speaker. In his informative lecture through power point presentation, he stated that the knowledge of Nanotechnology is intensive and its enabling technology is expected to influence a wide range of products and processes with far-reaching implications for national economy and development.



He made a comparison of DNA, Bacterium, raindrop, single walled carbon nanotube, strand of hair and a house and said that DNA is thousand times smaller than Bacterium and Bacterium is thousand times smaller than the rain drop. In the same way, a single walled carbon nanotube is one lakh times smaller than the strand of hair which in turn one lakh times smaller than a house.

Dr. Dattatri also mentioned the possible use of Nanoporous surfaces for medical applications such as Artificial limbs, Glass eyes, artificial pacemakers, cardiovascular stents and drug electing stents in addition to several other medical application, He also explained the implantation of Biomedicine in human body and how it is carried out by citing many examples.

The presentation was followed by a brief question- answer session. The session was compeered by Mr. Uzma Bathool, Asst. Prof. Dept. of Microbiology, St. Philomena's College, Mysore. It was lunch time and the delegates broke off for a sumptuous vegetarian meal.

## TECHNICAL SESSION-2

The post –lunch session resumed at 2-0pm. The theme of the session was 'Bio-degradable Nanoparticlcs recruited for targeted delivery of Anti-malarial and Anti-cancerous agent'. The speaker of the session was Dr. Basavaraj Madhusudan, Dean and Professor of P.G Studies and Research in chemistry, Davanagere University, Davangere.



He spoke quite interestingly about the Nature's Nanofactory. He, in particular, made the audience feel grateful to the Nature's treasure already available to fulfill our needs.

In his opinion, the particles or anything available in the world is composed of nanoparticles. In continuation, he said that Nano medicine is the medical applications of Nanotechnology. Nanomedicine range from the medical applications of nanomaterials to nano-electric biosensors. The current problems of Nanomedicines involve understanding the issues related to toxicity and environmental impact of Nanoscale materials (materials whose structure is on the scale of nanometers. i.e. billionth of meter).

He spoke with great emphasis about the integration of nonmaterials with Biology which has led to the development of diagnostic devices, contrast agents, analytical tools, physical therapy applications and drug delivery vehicles. He further gave specific details about the upcoming NanoTechnology which has also provided the possibility of delivering drugs to specific cells using nanoparticles. Moreover, the overall drug consumption and side-effects may be lowered significantly by depositing the active agent in the morbid region only and in no higher dose which is needed. The delegates were stunned by the extraordinary lucidity and elegance of the style of presentation.

### **TECHNICAL SESSION-3**

At the dusk of the day one of the seminar, there was an oral paper presentation session in which participants from different colleges, universities presented their papers. There were altogether 05 oral presentations.

- The 1st paper was presented by Dr. K.M. Mohan, Associate Professor, Dept. of P.G. studies and Research in Chemistry, Manasagangothri, Mysore. He spoke about various latest techniques adopted prevention of corrosion.

- The 2<sup>nd</sup> paper was presented by Dr. T. Demappa, Associate Professor, Dept. of P.G. Studies & Research in Polymer Science, Tubinakere, Mandya District.

He explained how Edible films of hydroxy propyl methylcellulose (HPMC) in food packaging can be used to increase shelf-life and improve organoleptic characteristics of foods.

- The 3<sup>rd</sup> speaker was Ms. Ozma Jane D'Souza, Research Scholar in Chemistry St. Joseph's College, Bangalore. She delivered a talk on A sensitive and selective electroanalytical method for the determination of acetaminophen (ACT) is studied using platinum nanoparticle decorated multi-walled carbon nanotubes (PtMWCNTs) and Triton X-100 (TX100) modified carbon paste electrode
- The next speaker was Padmanabha B, Post Graduate Dept. of Applied Zoology, Maharani's Science College for women, Mysore . He explained the role of cations and anions in hydrogeochemistry to assess water quality.
- Prof. Usha B. Department of Biochemistry, Alva's College, Moodbidri presented the last paper of the session on studies on antioxidant and antimicrobial activities of phyllanthus species.



The session ended with concluding remarks by the chairperson of the session Prof. Revannasiddiah, Former Prof. of Physics, P.G. Studies & Research in Physics, Manasagangothri, Mysore.

The session was compered by Dr. T. Ruth Shantha Kumari, Associate Professor, Dept. of Zoology, St. Philomena's College, Mysore.

With this, all the proceedings of the day one of the National level seminar got over successfully.

### **SECOND DAY OF THE SEMINAR**

On the 23<sup>rd</sup> August, 2013, the 2<sup>nd</sup> day of the seminar, the organizers were put to hardship to move ahead with the 2<sup>nd</sup> day's scheduled proceedings as the news of the passing away of famous Kannada Litterateur Dr. U.R. Anantha Murthy was announced. The Govt. of Karnataka declared it a Govt. holiday and hence all the proceedings of the 2<sup>nd</sup> day of the seminar had to be rescheduled. This was a herculean task and the organizers managed it in handling the situation meticulously.

### **POSTER SESSION**

The poster session started at 9.00am. Panel of experts for session were

Dr. Ravi J.D. Saldanha of the College was in-charge of the poster session. Eight posters were presented by the delegates which were critically evaluated by the experts.

### **TECHNICAL SESSION-4**

This session started at 10-00am. Before the session could begin, a minute of silence was observed by the audience as a mark of respect for the departed soul of Dr. U.R. Anantha Murthy. Later, Prof. M. Raphael, In-charge Principal of the College gave the condolence message.

The invited speaker of the session Dr. Parthsarathi Mukherjee , Associate Professor, Indian Institute of Science, Bangalore. The title of the session was 'Supramolecular Coordination'



Dr. Mukherjee shed light on the said topic through power point presentation. He mentioned that supramolecular coordination is a highly inter disciplinary field of science covering the chemical, physical and biological fields.

He also said that supramolecular chemistry is the chemistry beyond molecules. He substantiated this fact through explanation by taking intermolecular force of the molecules. Further, the investigation of intermolecular forces starts from macroscopic observations which point out the existence and action of forces at molecular level. These observations include non- ideal gas thermodynamic behaviour reflected by virial coefficients, vapour pressure, viscosity, superficial tension and adsorption data. He elaborated the topic through terms like Functionalization and sensors with illustrations. He later explained about the possibility of catalyzing organic reactions in a confined nanospace in aqueous medium. He concluded his talk by telling that the term Supramolecular Coordination is now a well accepted term in the world of Science. His presentation was followed by a brief question- answer session.

### **Technical Session-5**

The theme of this session was ‘Characterization of Nanomaterials’. The resource person was Dr. Dattatri k Nagesh, Professor, JSS College of Pharmacy, Mysore. Dr. Dattatri, through his powerpoint presentation , narrated briefly about the topic as to how characterization of Nanomaterials have found a vital role in the field of research.



He presented the results of characterization study made on Nanomaterials. He further mentioned about the size, size distribution, shape, composition and surface of the Nanomaterials. He gave a brief explanation to the radius of an airy disc. He called upon the delegates to take up research in the field of characterization of Nanomaterials and exciting career options available in this field. This session too, witnessed queries from delegates on various issues.

Both the sessions of morning were compered by Ms. Uzma Bathool, Dept. of Microbiology, St. Philomena's College, Mysore.

Due to the sudden and unexpected developments, and that too, State Government declaring the day as a Govt. holiday, the pre-scheduled sessions of the afternoon were cancelled inevitably.

The Valedictory session began after the lunch break.

### VALEDICTORY FUNCTION

Dr. Shivaramiah, senior Manager, BIOCON Ltd, Bangalore was the guest of honour at the valedictory function of the seminar. IN his valedictory address, Dr. Shivaramaiah, stressed on the need of industry based collaboration in higher educational Departments. He



insisted this aspect for a very effective learning process and to get hands on experience along with the routine academic work. He congratulated the organizers for selecting a topic for seminar which is as apt as today as in the earlier days. Rt. Rev. Dr. Thomas A. Vazhapilly, Bishop of Mysore and President of Mysore Diocesan Educational Society was the President of the function. Dr. Alphonsus D'Souza, HOD of Chemistry & Biochemistry welcomed the guests and delegates.

Dr. T. Ruth Shantha Kumari, Associate Professor, Dept. of Zoology of the college

gave a brief summary of the two-day's proceedings of the seminar. She presented a brief report and summed up the deliberations of the seminar. Participants were invited to provide their feedback which was very much encouraging.

The best oral paper -presentations was won by Ms. Ozma Jane D'Souza of St.Joseph'sCollege, Bangalore and the best poster –paper presentation was won by Mr. Lakshmi Ranganatha V.of Yuvaraja'aCollege , Mysore.

Rt. Rev. Dr. Thomas A. Vazhapilly in his Presidential remarks cited the medical and ethical issues surrounding the research activities. He lauded the initiatives taken and efforts made by the organizing departments in hosting a mega event of this kind and praised its success.

Prof. Agnes Sylvia D'Souza, Associate Prof. in Chemistry, St. Philomena's College, (Autonomous) Mysore thanked each and everyone who were directly and indirectly involved in the smooth conduct of the seminar.

Ms. Afza of III B.Sc. compered the valedictory function. Participation certificates for delegates and students were distributed.

The two-day seminar ended with the National Anthem.



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**22-23 AUGUST, 2014**

**ORGANISED BY**

**DEPARTMENTS OF CHEMISTRY AND BIO-CHEMISTRY**

**ST.PHILOMENA'S COLLEGE (AUTONOMOUS)**

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