Brief report on the

SCIENCE ACADEMIES’ LECTURE WORKSHOP ON
“ADVANCES IN MOLECULAR SPECTROSCOPY”

The department of Chemistry, Sri Neelakanta Government Sanskrit College Pattambi has organized a two-day Science Academies’ lecture-workshop during March 4 - 5, 2011 supported by the three premier Science Academies in the country, namely, Indian Academy of Sciences, Bangalore, The National Academy of Sciences India, Allahabad, and Indian National Science Academy, New Delhi. The purpose of the workshop is to provide exposure to the postgraduate students, research scholars and teachers in the various colleges Kerala into the ever expanding field of molecular spectroscopy. This will also provide an opportunity for the participants to interact with leading scientists working in this area and get motivated to pursue research in this fascinating branch of Chemistry. From the Academies’ side, Professor K. George Thomas, Indian Institute of Science Education and Research, Thiruvananthapuram, acted as the convener of the program. Dr. P. Venugopalan, Head, Department of Chemistry acted as the coordinator.

A total of 253 participants registered for the two-day workshop. The program started at 09.30 AM on 4th March, 2011 with a brief inaugural session and Prof. K. L. Sebastian, inaugurated the workshop. The academic session started at 10 AM. The first day had four lectures from Prof. K. L. Sebastian (IPC, IISc, Bangalore), Dr. R. S. Swathi (IISER, Thiruvananthapuram), Dr. Vinesh Vijayan, (IISER, Thiruvananthapuram) and Dr. K. M. Sureshan (IISER, Thiruvananthapuram). Prof. K. L. Sebastian delivered a lecture about the fundamental aspects of quantum mechanics including the unique nature of electrons with demonstrations and interesting animations. He also presented a beautiful historical sketch of the subject. Prof. Sebastian also gave an account of research opportunities at I I Sc, Bangalore.
Dr. Swathi started her talk around 11.30 AM after the tea break. In her lecture she covered most of the major fundamental concepts related to spectroscopy including molecular Hamiltonian, Born-Oppenheimer approximation, selection rules, Stark effect etc.

The afternoon session began with a talk by Dr. Vineesh Vijayan on “Nuclear Magnetic Spectroscopy in Biochemistry”. He introduced the basics of FT NMR spectroscopy and described the various 2D and multidimensional NMR techniques and their pulse sequences commonly in use for protein sequencing and other biochemical applications. The biological applications of solid state NMR was also covered by Dr. Vineesh Vijayan.

In the forth session Dr. K. M. Sureshan delivered a lecture on the topic “Is the boundary between Chemistry and Biology Disappearing?” He started by describing how science is divided in to different disciplines and gradually reached the recent overlap of these disciplines. He epitomized the interdisciplinary aspects of biology and chemistry by illustrating some problems of biology solved by chemistry and vice versa.

Next day the workshop began with an inspiring lecture by Dr. Suresh Das, director, NIIST, Thiruvananthapuram on “Stimuli Responsive Materials”. He started with the photo responsive systems in nature and explained the science behind the photo-induced isothermal phase transitions in some cholesteric liquid crystals. In the next talk by Prof. K. George Thomas on “Light-Matter interactions in the Nan scale”, the speaker described the fundamental aspects behind size effect observed in quantum dots using quantum chemical concepts. He also made a clear distinction between the plasmon resonance absorption observed in nonmetals from the quantum phenomena exhibited by semiconductor quantum dots. The lecture had a very good response from the participants.

Between the above two talks we have also arranged a function to inaugurate our new instrumentation laboratory set up with FIST scheme. The instrumentation room was inaugurated by Dr. Suresh Das.
The afternoon session started with a talk by Dr. Mahesh Hariharan (IISER, Thiruvananthapuram) on “Structure of Natural and Non-natural DNA”. The speaker put forward some invoking ideas on why DNA is helical and moved to the structures of some artificially synthesized DNA strands. The concluding session was by Dr. Reji Varghese who talked about the DNA nanotechnology. The two dimensional and three dimensional ‘DNA Origami’ structures shown by him were fascinating.

Each session had a good interaction of the participants with the experts. There was also a feedback session. The participants expressed excellent remarks on the program and thanked the Academies for supporting the program. In the valedictory function, Dr. P. Venugopalan, Head of the Department and coordinator, thanked Prof. George Thomas and the Science Academies for providing an opportunity to organize this programme during this international Year of Chemistry 2011. Prof. George Thomas in his concluding remark thanked the organizers and put forward some useful suggestions to be considered in future. He also pointed out research opportunities existing at various National Institutions with special reference to IISc Bangalore, JNCASR Bangalore, and IISER Thiruvananthapuram and encouraged the M. Sc. students to pursue research in Chemical Sciences. Certificate of participation was given to all participants. Overall the program had good participation and excellent response from the teaching and student communities.
Dear Sir/Madam,

We proudly invite you for a two-day Science Academies' lecture workshop on Advances in Molecular Spectroscopy which is scheduled to be conducted on 4 and 5 March 2011 by the Post Graduate Department of Chemistry, Sree Neelakanta Government Sanskrit College, Pattambi. We solicit the presence of members of your faculty, research scholars and M.Sc. students of your esteemed institution.

Thank you,

Prof. M.P. Ravindra Kumar
Principal

Dr. P. Venugopalan
Head, Department of Chemistry

About the College

Sree Neelakanta Govt. Sanskrit College was founded in 1911 by the great Sanskrit scholar and reformist Pandit Haranjan Punasseri Nambi Sree Neelakanta Saras. Since then, it has grown into a premier institution of higher learning and is constantly in pursuit of excellence. SNGS College is one of the oldest and finest academic centers of its kind and has now emerged as one of the pioneering institutions of graduate and postgraduate studies in both arts and sciences.

About the Department

The Department of Chemistry was started in 1967, when science groups were introduced for pre-degree course. B.Sc. and M.Sc. degree courses were started in 1974 and 1982 respectively. The Department received a major FIST grant of ₹ 35 Lakhs from the Department of Science & Technology as a recognition of the promise it holds for the future.

LOCATION

The college is situated 3 kms away from Pattambi railway station and bus stand, in the Cherpulassery road and 14 kms away from Shoranur railway station.

Programme Schedule

04.03.2011 (Friday)

Registration 08.30 - 09.30
Inauguration 09.30 - 10.00
Session I 10.00 - 11.15
Session II 11.30 - 12.45
(Lunch)
Session III 13.45 - 15.00
Session IV 15.15 - 16.30

05.03.2011 (Saturday)

Session V 09.00 - 10.15
Session VI 10.30 - 11.45
Session VII 11.45 - 13.00
(Lunch)
Session VIII 13.45 - 15.00
Valedictory Function 15.10 - 16.00

Objective

The purpose of the workshop is to provide exposure to the postgraduate students, research scholars and teachers in the various colleges in north and central Kerala into the ever expanding field of molecular spectroscopy. This will also provide an opportunity for the participants to interact with leading scientists working in this area and get motivated to pursue research in this fascinating branch of Chemistry.

Venue

College Auditorium

Registration: Teachers, research scholars and postgraduate students can participate in the lecture workshop.

There is no registration fee for participation. Working lunch and tea will be provided to the participants.

Any communication in this regard can be forwarded to,

venugpamrita@gmail.com

Contact No. 9447301283 (Co-ordinator)