September 05, 2014

The Inaugural Function for Electronics Society "Silizium" was held on 05-Sep-2014 in Seminar Hall. The Programme started at 10.00am with a Welcome Address by Ankita Chugh, a student of B.Tech Electronics Sem III followed by Lamp Lighting. Dr Poonam Kasturi, Convener for the Inaugural Function formally introduced Dr. Anand Kumar Sethi to the gathering. Dr. Anand Kumar Sethi unveiled the Society Name, Logo and Tagline. It was followed by an enlightening talk by Dr. Sethi on "Electronics in India : Past, Present & Future". After the talk the final round for Technical Presentation started in Electronics Lab in New Building at 11.30 am. This Technical Presentation was judged by Dr. Ravinder Kaur.

The idea for the two competitions was proposed in the Weekly Department Faculty Meeting on 04-Aug-2014 i.e. Monday. The announcement for the same was done officially to the students on 07-Sep-2014 i.e. Wednesday. Students were active towards the event & 6 entries were received for the Society Name Logo & Tagline.
The details for the same are as follows :

Student	Year	Name	Logo	Tag line
Namrata Koli	3rd year	Silicium		The Innovative Society
Ujjawal Mahajan	3rd Year	Tech Labs		Wants to be Techlabist
Himanshu	3rd year	Vidyut		---
Rahul Soni	3rd year	Currentronix-Volta	---	---
Shivam Sharma	1st year	---		---
Neha Minhas	3rd Year	Dexterous Society		INNOVATION IS DOING NEW THING AND YES We CaN dO eVeRyThInG pOsSiBlE

After several rounds of discussion among the Faculty Members the name "Silicium" proposed by Namrata Koli was chosen with a little modification to the final name "Silizium". Silicium is a French word used for 'SILICON' and Silizium is its German Translation. Silicon is the Back bone of Modern Electronics providing a base to various circuit designs. Namrata Koli will be awarded with a Certificate and a cash prize of Rs 500/-. However, the entries for Tagline and Logo were not that convincing and the Faculty decided to work upon it. It took a week's time for the Faculty to explore their creativity and come up with the Logo & Tagline. There following suggestions for the Tagline were given:

- The Innovative Society
- Integrating Innovative Ideas
- Integrating Innovative Minds
- Bonding Technical Minds

The tagline "Integrating Innovative Minds" was finally chosen to be the Tagline for our Society.

The purpose of SILIZIUM - the Subject Society of Department of Electronics is to provide a platform to innovative minds by bringing them together and providing opportunities to explore themselves.The Logo for the Society is a combined effort of ideas as well as creativity from all Faculty Members. The Logo of the society is circular in shape. A Circle has no beginning or end, neither sides nor corners thus it represents unity and wholeness. The Base of the Logo is depicted by a Silicon wafer with abbreviation "es" that stands for Electronics Society embedded on it.
For the Technical Presentation Competition a total of 11 entries were received on various upcoming and Recent Technologies in field of Electronics. The details are as follows :

Topic	Student	Class
Li-Fi	Ankita Chugh	2nd Year
Oculus Rift	Akshay	1st year
Organic Light Emitting Diode	Harshit	3rd year
Brain Computer Interface	Divya Doel	2nd year
Sixth Sense Technology	Anmol Agnihotri	1st year
LTE	Akash Powar	3rd year
Bio-magnetic Therapy	Himanshu	3rd year
NFC	Tushar Rohilla	2nd year
Quantum Dots	Ravi	1st year
E-Waste	Vivek Kumar	1st year

The Preliminary Round for the same was held on 29-Aug-2014 in the Electronics Lab New Building. The presentations were judged on the following criteria :

Criteria	Weightage
Time Limit : (8 min + 2min)	25%
Understanding of Technology	25%
Presentation Skills & Confidence	25%
Questions from Audience	25%
Grade	**Marks(Out of 10)**
A+	8-10
A-	6-8
B+	5-6
B-	4-5
C	0-4

Based on above criteria the results for the Preliminary Round are as follows :

Topic	Student	Class	Grade
Li-Fi	Ankita Chugh	2nd Year	A
Oculus Rift	Akshay	1st year	A-
Organic Light Emitting Diode	Harshit	3rd year	A-
Brain Computer Interface	Divya Doel	2nd year	A
Sixth Sense Technology	Anmol Agnihotri	1st year	B-
LTE	Akash Powar	3rd year	A-
Bio-magnetic Therapy	Himanshu	3rd year	A+
NFC	Tushar Rohilla	2nd year	B-
Quantum Dots	Ravi	1st year	C
E-Waste	Vivek Kumar	1st year	B-

The following 6 presentations were selected for final round on 05-Sep-2014 and the results as evaluated by the judge Dr. Ravinder Kaur are as follows :

Topic	Grade	Marks
Li-Fi	A	9.5
Brain Computer Interface	A-	8.5
Bio-Magnetic Therapy	A	9.5
Organic Light Emitting Diodes	B	8
Oculus Rift	A	8
LTE	B	7.5

The result for the Technical Presentation is as follows :

1st prize	Li-Fi
	Bio-Magnetic Therapy
2nd prize	--

It was decided that the First Prize will be shared between Ankita Chugh (Li-Fi) and Himanshu (Bio-Magnetic therapy) with a Certificate and a Cash prize of Rs 350/- each.

September 13-14, 2014

Theme of the Workshop

The main theme of the workshop is to provide a forum for undergraduate and post graduate students to interact with the technologists carrying out leading edge research and development in the area of process and device technology. The workshop is organized on the success of first, second and third national workshop held in Feb 2010, Sept 2010 and January 2013 respectively which witnessed gathering of over 100 delegates from all over India. This time we have invited speakers from Defense labs. Of Govt of India and leading research and academic institutions, who will present new ideas about device and process physics, demonstrate applications to leading edge technologies, and show new models for devices. The aim of the workshop is to inspire young students to take up research and development as a career in the core and thrust areas of R&D as proposed by DRDO.

Technical Programme Schedule

September 13, 2014 (Saturday)	
09:00 AM – 09:30 AM	Registration
09:30 AM - 10:00 AM	Inauguration
10:00 AM – 10:45 AM	*Combination of High Resolution X-ray Diffraction and Reflection Techniques for Characterization of Advanced Materials* **Dr. Krishan Lal**, Former President-INSA, New Delhi
10:45 AM - 11:30 AM	*Advances in Gallium Nitride High Power RF Transistor Technology* **Dr B K Sehgal,** Scientist G, Solid State Physics Laboratory (SSPL), DRDO, Delhi
11:30 AM - 11:45 AM	High Tea
11:45 AM - 12:30 PM	*MEMS/NEMS Technologies and Applications* **Dr. Amita Gupta,** Scientist G, Solid State Physics Laboratory (SSPL), DRDO, Delhi
12:30 PM – 01:15 PM	*Nanomaterials and their applications in photovoltaics - Present state of Art* **Professor P K Bhatnagar,** UGC-BSR Fellow, Department of Electronic Science, University of Delhi
01:15 PM – 02:00 PM	Lunch
02:00 PM – 02:45 PM	*Carbon Nano Tube based Chemical Sensor Technology* **Professor Harsh,** Jamia Millia Islamia (JMI), New Delhi and Formerly with Solid State Physics Laboratory (SSPL), DRDO, Delhi
02:45 PM – 03:30 PM	*Graphene based devices* **Dr. P. K. Chaudhury,** Scientist G, Solid State Physics Laboratory (SSPL), DRDO, Delhi
September 14, 2014 (Sunday)	
09:30 AM - 10:00 AM	*Registration*
10:00 AM – 10:45 AM	*Combination of High Resolution X-ray Diffraction and Reflection Techniques for Characterization of Advanced Materials* **Dr. Krishan Lal**, Former President-INSA, New Delhi
10:45 AM - 11:30 AM	*Advances in Gallium Nitride High Power RF Transistor Technology* **Dr B K Sehgal,** Scientist G, Solid State Physics Laboratory (SSPL), DRDO, Delhi
11:30 AM - 11:45 AM	High Tea
11:45 AM - 12:30 PM	*Nanomaterials and their applications in photovoltaics - Present state of Art* **Professor P K Bhatnagar,** UGC-BSR Fellow, Department of Electronic Science, University of Delhi
12:30 PM – 01:15 PM	*MEMS/NEMS Technologies and Applications* **Dr. Amita Gupta,** Scientist G, Solid State Physics Laboratory (SSPL), DRDO, Delhi
01:15 PM – 02:00 PM	Lunch
02:00 PM – 02:45 PM	*Graphene based devices* **Dr. P. K. Chaudhury,** Scientist G, Solid State Physics Laboratory (SSPL), DRDO, Delhi

Institution wise Number of Participants

S. No.	Affiliation	No.
1.	Amity School of Engineering and Technology, Bijwasan	1
2.	Basavakalyan Engineering College, Visvesvaraya Technological University	1
3.	Bhagini Nivedita College, University of Delhi, New Delhi	20
4.	Bhagwan Parshuram Institute of Technology, GGSIPU, New Delhi	11
5.	Bhaskaracharya College of Applied Sciences, University of Delhi, New Delhi	2
6.	Daulat Ram College, University of Delhi, New Delhi	1
7.	Deen Dayal Upadhyaya College, University of Delhi, New Delhi	62
8.	Delhi Technological University, New Delhi	1
9.	Department of Electronic Science, University of Delhi South Campus	15
10.	Gargi College, University of Delhi, New Delhi	7
11.	Hansraj College, University of Delhi, New Delhi	6
12.	IGNOU, New Delhi	1
13.	Indraprastha Institute of Information Technology (IIIT), Delhi	4
14.	Jaypee Institute of Information Technology, A-10,Opposite Electronic City, Sector-62, Noida	4
15.	Kalindi College, University of Delhi, New Delhi	1
16.	Maharaja Agrasen College, University of Delhi, New Delhi	48
17.	Maharaja Agrasen Institute of Technology, Sector-22, Rohini, Delhi-85	3
18.	Motu Ram Institute of Enggineering and Mangement, Maharishi Dayanand University	1
19.	NIT Hamirpur	1
20.	School of Sciences, IGNOU, New Delhi	1
21.	SGND Khalsa College, University of Delhi	1
22.	Shaheed Rajguru College of Applied Sciences for Women, University of Delhi, New Delhi	62
23.	Sri Aurobindo College, University of Delhi, New Delhi	2
24.	Sri Venkateswara College, University of Delhi	8
25.	St. Stephan's College, University of Delhi, New Delhi	1
26.	Swami Shraddhanand College, University of Delhi, New Delhi	1
27.	UIET, Maharishi Dayanand University	1
28.	Uttar Pradesh Technolgical University	2
29.	Vaish College of Engineering, Maharishi Dayanand University	1
30.	Zakir Husain College, University of Delhi	15
	Grand Total	**285**

Professor Krishan Lal


Deen Dayal Upadhyaya College
Organizes
National Workshop
On
Sponsored
DEEN DAYAL


in Photovoltaics-Present State of
P. K. Bhatnagar, P.C.Mathur, Shiv Kumar Dixit, Anita
Kumari, Neetu Prasad, Shikha Madan, Inderpreet Singh,
Amandeep Kaur ,C. S Bhatia*
Materials Laboratory, Department of Electronic Science
University Of Delhi South Campus
New Delhi. India.
* National University of Singapore, Singapore.


Society
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DEEN DAYAL UPADHYAYA
COLLEGE
UNIVERSITY OF DELHI


Graphene and Device Applications
Dr P K Chaudhury
Solid State Physics Laboratory
Delhi-54
SILIZIUM-Electronics Society
Department of Electronics, Deen Dayal Upadhyaya College
Organizes
Fourth National Workshop
On
Recent Trends in Semiconductor Devices and Technology
September 13-14, 2014
Defence Research and Devel
Ministry of Defence,
IEEE EDS Delhi C
DEEN DAYAL UPADHYAYA COLLEGE
UNIVERSITY OF DELHI
ELECTRON
EVICES
SOCIETY

October 13, 2014

Technical Lecture
on
Earth Tides on the so-called solid earth and the G.P.S. connections

Organized by Silizium-Electronics Society, Department of Electronics, Deen Dayal Upadhyaya College

October 13, 2014 at 02:00 pm, Seminar Hall, Deen Dayal Upadhyaya College

Professor Erode Subramanian Raja Gopal
D.Sc. (h.c.), FNA, FNASc, FASc
Emeritus Scientist, Department of Physics, Indian Institute of Science, Bangalore, India

Brief CV

Erode Subramanian Raja Gopal the obtained his MA (Physics) in 1956, and MSc (by research) in 1958, both from the University of Madras, the PhD (1961) from the Indian Institute of Science (IISc), Bangalore and DSc (hc) (1999) from Burdwan University. He spent three years (1961-64) in postdoctoral research at the Clarendon Laboratory, University of Oxford. Thereafter, he held various positions at IISc becoming Assistant Professor (1965), Professor (1969), Dean of the Faculty of Science (1976), Chairman of the Department of Physics (1977), Chairman, Instrumentation & Services Unit/Regional Instrumentation Center (1983) and MSIL Professor (1990). In 1991, he was appointed Director of the National Physical Laboratory (NPL), New Delhi. After superannuating from NPL (1997), he was CSIR Emeritus Scientist (1997-2001), first at NPL and then in the Department of Physics at IISC; INSA Scientist (2001-06); and INSA Honorary Scientist (2006-).

Academic and Research Achievements: Professor Gopal's research interests have been in precision measurements and the study of condensed matter, especially phase transitions in liquid systems and disordered materials. These studies use techniques of ultrasonics, thermal instrumentation, low temperature physics, high-pressure physics and electronics/computer instrumentation. The first observation of the particle-hole asymmetry in the liquid-gas critical phenomena in binary liquid mixtures and the observation of the percolation threshold in covalently bonded chalcogenide glasses are examples of the outcome of precision measurements. Besides experimental investigations, associated theoretical studies have also been pursued by him. He has written 2 books, edited 2 books and authored more than 250 research papers. He has guided more than 60 students for their PhD/MSc (Engineering).

Other Contributions: Since 1973, Professor Gopal has been involved with the editing and publishing of Pramana -- Journal of Physics, being its Chief Editor also during 1984-89. He has been Chief Editor of the Journal of the Acoustical Society of India (1982-87) and involved with the editorial work of several other journals. From 2004, he has become Editor-in-chief of the Journal of the Instrument Society of India. He is also Life Member of the Indian Physics Association, and the Instruments Society of India. He was Member of the Council of the International Bureau of Weights and Measures, Paris (1993-2003).

Awards and Honours: Professor Gopal was awarded the **SS Bhatnagar Award for Physical Sciences (1978)**, Sir CV Raman Award of the Acoustical Society of India (1978-80), NRDC Inventions Promotions Award (1984), ASI Dr S Bhagavantam Award (1993-94), INSA Homi Jehangir Bhabha Medal (1994), BRSI Life Time Achievement Medal (2005) and ISOI Annual Award (2005). He has got the UGC National Lectureship (1974-75), Lord Rippon Memorial Lectureship (IACS, 1987), Professor PA Pandya Memorial Lectureship (IPA, 1991), Golden Jubilee Lectureship in Physical Sciences (ISCA, 1992), Professor BN Singh Memorial Lectureship (Delhi University, 1992), Dr S Bhagavantam Memorial Lectureship (APAS, 1994), and Golden Jubilee Lectureship (IISc, 1998). He served as President of various societies, notably the Indian Cryogenics Council (1986-88), Acoustical Society of India (1990-92), Indian Society for Mass Spectrometry (1992-95), Ultrasonics Society of India (1993-98), Instrument Society of India (1993-97), Metrology Society of India (1994-98), and Vice President of the Indian Physics Association. He was elected **Fellow of the Institute of Physics, UK, Indian Academy of Sciences, Bangalore, National Academy of Sciences (India), Allahabad, Indian Cryogenics Council, Acoustical Society of India, Metrology Society of India, and Ultrasonics Society of India.**


TECHNICAL LECTURE
By
Organized by
Electronics, Deen Dayal Upadhyaya


TECHNICAL
on
DEEN DAYAL UPADHYAYA

October 17, 2014

About Women in Science Panel

The Council of the Indian Academy of Sciences had in January 2003 constituted a committee on "Women in Science" to look into the issues of women scientists. This led to the formation of a Panel for "Women in Science" (WiS), in January 2005, to study the issues of women scientists and to suggest measures for obtaining suitable solutions. The Panel of Women in Science has embarked on a new initiative of conducting a series of seminars/lectures on the topic "Women in Science : A Career in Science" under their Role Model Program. These seminars are conducted to address the various career options for women in the field of science. The seminars will have presentations by leading women scientists to showcase the work done by women scientists to an audience of both the genders.

Technical Programme Schedule

09:00 – 09:45	Registration
09:45 – 10:00	Inauguration
10:00 – 10:45	***Scientific career: the pleasure of solving mysteries*** Dr. Chandrima Shaha, *FNA,FASc,FNASc (Convener-Workshop)* Director, National Institute of Immunology, Aruna Asaf Ali Marg, New Delh
10:45 – 11:15	Tea Break
11:15 – 12:00	***Evidence for Hyaluronan Bonding Protein 1 (HABP1) as a Tumor Biomarker*** Professor Kasturi Datta, *FNA, FNASc, FTWAS* DBT Distinguished Biotechnology Professor School of Environmental Sciences, Jawaharlal Nehru University, New Delhi
12:00 – 12:45	***Engineering Plants for the Changing Climatic Scenario*** Professor Paramjit Khurana, *FNA, FASc, FNASc, FNAAS, J.C. Bose National Fellow* Department of Plant Molecular Biology, University of Delhi South Campus, New Delhi
12:45 – 13:30	Lunch
13:30 – 14:15	***Photonics Research in India- A Personal View*** Dr. (Mrs.) Niloufer Shroff Scientist G & Head (Electronics Materials and Components Division) Electronics Niketan, DEiTY, MCIT, Govt. of India
14:15 – 15:45	Panel Discussion on **Encouraging women in science will enrich science** • Dr. Chandrima Shaha, *FNA,FASc,FNASc (Convener-Workshop)* • Dr. (Mrs.) Niloufer Shroff, Scientist G, Electronics Niketan, DEiTY, MCIT, Govt. of India • Professor Mridula Gupta, Department of Electronic Science, University of Delhi South Campus and Chairperson-IEEE EDS Delhi Chapter • Professor Riddhi Shah, School of Physical Sciences, JNU, New Delhi • Professor Geetha Venkataraman, Professor of Mathematics, School of Liberal Studies, Ambedkar University Delhi • Professor Mini Shaji Thomas, Deptt. of Elect. Engg., Faculty of Engg. & Tech. Jamia Millia Islamia, New Delhi
15:45 – 16:15	Valediction and Tea

Institution wise Number of Participants

S. No.	Affiliation	No.
1.	Acharya Narendra Dev College,University of Delhi, New Delhi	**4**
2.	Miranda House,University of Delhi, New Delhi	2
3.	G.D. Goenka Public School, Paschim Vihar,New Delhi	9
4.	Deen Dayal Upadhyaya College, University of Delhi, New Delhi	124
	Grand Total	**139**

Dr. Chandrima Shaha, *FNA,FASc,FNASc (Convener-Workshop),* Director, National Institute of Immunology, Aruna Asaf Ali Marg, New Delh and Professor Paramjit Khurana, *FNA, FASc, FNASc, FNAAS, J.C. Bose National Fellow,* Department of Plant Molecular Biology, University of Delhi South Campus, New Delhi

Dr. Chandrima Shaha, *FNA,FASc,FNASc (Convener-Workshop),* Director, National Institute of Immunology, Aruna Asaf Ali Marg, New Delh


An Indian Academy of Sciences Initiative
One Day Seminar on "Women in Science: A
Organized by
Silizium-Electronics So
Supported by
Dr. Manoj Saxena
Coordinator-Workshop


Women in Science
An Indian Academy of Sciences Initiative
One Day Seminar on "Women in Science: A career in Science"
Dr. Poonam Kasturi
Convener-Silizum


Day Seminar on "Women in Science: A career in Science"
Organized by
University of Delhi
Supported by
Delhi Chapter
drima Shaha
Institute of Immunology
er-Workshop
Department of Electronics


Women in Science
An Indian Academy of Sciences Initiative
One Day Seminar on "Women in Science: A career in Science"
Society
Bangalore and IEEE EDS Delhi Chapter
Dr. Poonam Kasturi
2:57 PM
10/17/2014


Women in Science
An Indian Academy of Sciences Initiative
One Day Seminar on "Women in Science: A career in Science"
Organized by
Silizium-Electronics Society
Department of Electronics, Deen Dayal Upadhyaya College, University of Delhi
Supported by
Women in Science Panel, Indian Academy of Science, Bangalore and IEEE EDS Delhi Chapter
Dr. Chandrima Shaha
Dr. Manoj Saxena
Dr. Poonam Kasturi
DEEN DAYAL UPADHYAYA COLLEGE


on "Women in Science: A career in Science"
Organized by
Supported by
Dr. Manoj Saxena


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ge, University of Delhi
and IEEE EDS Delhi
Dr. Poonam Kas
Professor, Departmen
Convener-Silizu
DEEN DAYAL


YA COLLEGE

On January 21, 2015, the society organized Professor Meghnad Saha Memorial Award Lecture jointly with National Academy of Sciences India (NASI) on the topic "Stellar Evolution to Black Holes and Beyond" delivered by Professor Bimla Buti, Director, Centre for Science and Society, New Delhi. She discussed the fundamental contribution made by Professor Megh Nad Saha in the area of Thermal Ionization for the interpretation of Stellar Spectra.


National Academy of Sciences, India & Deen Dayal Upadhyaya College
Jointly Organizes
Professor Meghnad Saha Memorial Award Lecture
On
By


Summer Research Program
LIGO Laboratory at California Institute of Technology hosts a 10-week summer student research program every year, called the LIGO SURF Program.
LIGO has graciously agreed to host a few talented and motivated undergraduate students from Indian institutions, pre-selected by IndIGO, as part of this program.
through the LIGO Project. Selected students on summer research projects either at the ampus in Pasadena, California or at the LIGO ory sites in Washington or Louisiana.
National Academy of Sciences, India & Deen Dayal Upadhyaya College
Jointly Organizes
Professor Meghnad Saha Memorial Award Lecture
On
By
DEEN DAYAL UPADHYA
(UNIVERSITY OF DELHI)
COLLEGE

#

On January 30-31, 2015, the Second Lecture Workshop on Trans-disciplinary Areas of Research and Teaching by Shanti Swaroop Bhatnagar Awardee was organized

Theme of the Workshop

The Workshop is of multidisciplinary nature and will cover the discipline of science and engineering and is intended to expose undergraduate students and faculty members to thrust areas of research with emphasis on indigenous problems. Bhatnagar awardees are the most appropriate scientists to draw attention of young students to frontline research areas in different disciplines. SSB awardees from the area of Physical and Engineering Science shall discuss the role and importance of trans-disciplinary studies and research with Under graduate students. The SSB awardees through lectures shall disseminate advancement in science and technology and emerging and futuristic areas of inter-disciplinary and multi-disciplinary areas. The workshop's theme is to create awareness among students and faculty members need of innovations in teaching and learning processes based on technology enabled courses which has close linkage with industry requirements. *The workshop shall set the tone for developing and upgrading innovative undergraduate courses.*

January 30, 2015 (Friday)	
Time	**Technical Session – Life and Medical Sciences**
09:50 – 10:00	Inauguration
10:00 – 11:00	*Chasing the dream- the path from research to human benefit* **Professor Asis Datta**, *FASc, FNA, FNASc, FTWAS* Distinguished Scientist and *Formerly:* Founder Director & Professor of Eminence, National Institute of Plant Genome Research Vice Chancellor, Jawaharlal Nehru University, New Delhi
11:00 – 12:00	*Health and Wellbeing in the Changing Urban Environment- A Systems Science Approach* **Dr. Indira Nath**, *MD,FRCPath, DSc(hc), FNA,FASc,FNAS, FAMS,TWAS* Former, Head and Sr. Professor, Dept. Of Biotechnology, AIIMS,Delhi Former, Raja Ramanna Fellow and Emeritus Professor, NIOP, Delhi
January 31, 2015 (Saturday)	
Time	**Technical Session – Engineering Sciences**
10:00 – 11:00	*Some Fundamental Breakthroughs in Communication Theory* **Professor Surendra Prasad**, FNA, FNAE, FNASc, FASc Former Director-IIT Delhi &Bharti School of Telecom. Technology & Management Indian Institute of Technology, Hauz Khas, New Delhi 110 016
11:00 – 11:30	Tea
11:30 – 12:30	*100 Years of X-ray Crystallography* **Professor S. K. Joshi**, *FNA, FNASc, FTWAS, FASc* Distinguished Emeritus Scientist CSIR & Honorary Vikram Sarabhai Professor, JNCASR National Physical Laboratory Dr K.S. Krishnan Road , New Delhi 110 012
12:30 – 13:30	*Generalized Rough Sets, Uncertainty Analysis and Granular Image Mining* **Professor Sankar K. Pal**, *FNA, FASc, FTWAS, FIAPR, Fellow IEEE* Distinguished Scientist and former Director, Indian Statistical Institute, Kolkata, INDIA
13:30 – 14:15	*Lunch*

Organizers

Dr. Manoj Saxena, *Convener-Workshop*
SM-IEEE (USA), M.N.A.Sc. (Allahabad), MInstP (UK)
Associate Professor, Department of Electronics
Deen Dayal Upadhyaya College, University of Delhi

Dr. Poonam Kasturi, *Secretary-Workshop*
Associate Professor, Department of Electronics
Deen Dayal Upadhyaya College, University of Delhi

Chasing the dream- the path from research to human benefit

Professor Asis Datta, *Padma Bhushan*
Distinguished Emeritus Scientist, Formerly:
Founder Director and Professor of Eminence, National Institute of Plant Genome Research and Vice Chancellor, Jawaharlal Nehru University, New Delhi), Aruna Asaf Ali Marg, JNU Campus, New Delhi- 110067
E-mail: asis_datta@rediffmail.com, **asis_datta@nipgr.ac.in**

Genomics has emerged as the single most powerful discipline for detailed analysis of organization expression, and interaction of an organism at the genome level. The new research tools available may overcome many of the technical roadblocks that limit the application of conventional biological techniques in agricultural research. The present trend on genome research has already posed a special challenge and dire threat to the economics of the nations who are unable or unwilling to take advantage of the available technology. As for example in the field of agriculture, biotechnology has given new tools for effectively ensuring food and nutritional security for the developing countries. Limitations of water resources, decreased fertility of arable land skyrocketing cost of energy and galloping increases in the population make it imperative that food supplies of the 21st century will depend on a new from of agriculture in which custom-made food plants will dominate the world market.

Prof. Asis Datta (Ph.D., D.Sc., FNA, FASc., FNASc, FTWAS) is the Professor of Eminence at National Institute of Plant Genome Research, New Delhi. He has been Vice-Chancellor of Jawaharlal Nehru University (JNU) and Founder Director of National Institute of Plant Genome Research (2002-2008). Professor Asis Datta has done pioneering work in the field of molecular biology. His individual and group achievements in the field of molecular biology and genetic engineering have been spectacular and have secured for him a unique position in several areas of frontier research. Professor Datta is known for his work on the pathogenic yeast. In addition, the scientific/research contributions have been vital in areas of food/nutritional security and Use of genetically modified food. His group is known for pioneering contributions in molecular biology and identification and manipulation of novel genes leading to the production of transgenics of high societal value. His relentless effort throughout has established a vibrant school of research on "structure –function-application" of eukaryotic genes, which led to the establishment of the National Institute Plant Genome Research, India's first and only one research centre of its kind. Prof. Datta's professional standing is also attested by his nomination to numerous national and international bodies. He has more than 100 research publications in Journals of repute. He is the recipient of several prestigious awards including Shanti Swaroop Bhatnagar Prize in Biological Sciences by CSIR (1980); Guha Memorial Award (1988); Sir Amulya Rattan Oration Award (1988); First GD Birla Award for Science and Technology (1991); Dr. Nitya Anand Endowment Award, INSA (1993), The Federation of Indian Chamber of Commerce and Industry Award for R&D in Life Sciences (1994); Om Bhasin Award for Science and Technology (1995), Third World Academy of Sciences Awards (TWAS) for Biology (1996), D.M Bose Endowment Lecture (1996),Goyal Prize in Life Sciences (1996); Ranbaxy Award in Medical Sciences (1996); Jawaharlal Nehru Birth centenary Lecture (1999) of INSA, Indira Gandhi Priyadarshini Award (2000); R.D Birla Award for Bio-Medical (2001), Dr. B. R. Ambedkar Centenary Award for Excellence in Biomedical Research, ICMR, Govt. of India (2003), Bashambar Nath Chopra Lecture Award, INSA (2004). Government of India honored Professor Asis Datta with Padma Shree (1999); He is a Fellow of Third World Academy of Sciences, Indian National Science Academy, Indian Academy of Science and National Science Academy, India. Prof. Datta was the president of the National Academy of Sciences (India) (2009-11). Several Universities awarded Doctors of Science to Prof. Datta for wide ranging contributions. Prof. Asis Datta was the General President of Indian Science Congress Association for 2003-2004 and served for three years as Chairman of Recruitment of Assessment Board (RAB), CSIR. He was awarded Asutosh Mookerjee Medal Award at the 92nd Session of Indian Science Congress, January 2005 and honored with Prof. R.C. Mehrotra Life time achievement award for the year 2005-2006 in the 93rd Session of Indian Science Congress, January 2006, Gold & Silver Trophy & Gold Medal for exception caliber and outstanding performance in the area of Biological Sciences "Rising Personalities of India Award" awarded by International Penguin Publishing House for the year 2007, Adhar Chandra Mookerjee Award Calcutta University (2009). Government of India honored Professor Datta with Padma Bhusan (2008), Life time achievement award by Biotech Research Society (2011), Priyadarshini Gold Medal award for outstanding achievements (2011) and G.M. Modi Award for Innovative Science & Technology (2011).

Health and Wellbeing in the Changing Urban Environment- A Systems Science Approach

Indira Nath, *Padamshri*
Former, Head and Sr. Professor, Dept. of Biotechnology, AIIMS,Delhi
Former, Raja Ramanna Fellow and Emeritus Professor, NIOP, Delhi

For the first time in human history, more people live in urban settings than in rural areas. 40 million people are added each year. In the next 20 years, India will have 68 cities with > one million (42 today) and 30% of Indians will live in cities with the urban population increasing from 340 to 500 million. 10% of humanity would be living in Indian cities! Internal migration to cities poses a severe problem as it is difficult to retrofit cities than to build new ones. Cities provide better opportunities for education, health care and employment. However, due to climate and land use changes, urban planning to avoid health hazards due to pollution, water shortage, heat islands, poor sanitation is complex and inter-related. Planning needs to be multidisciplinary and linkages between sectors need new type of modeling. Just like the human body, the city needs to be treated as a System with multiple organic parts. These parts such as waste management, internal migration, transport, building styles etc need to be looked at as linked issues using Systems Sciences and modelling. This would provide informed decision making for policy makers. At present countries look at these issues as silos which does not provide adequate information on unintended consequences. For example when government provides roads with the intention of improving transport, vehicles increase leading to pollution and people walk less leading to life style diseases and obesity as unintended consequences. The current global scenario to address these issues using Systems Sciences would be highlighted with examples.

Indira Nath nee Neti Indira Rao received MBBS from the All India Institute of Medical Sciences (AIIMS), New Delhi. After the mandatory hospital training undertaken in UK, she returned to AIIMS for MD (Pathology). She was prompted to specialize in immunology due to her exposure to the new discipline while in UK availing the Nuffield Fellowship (1970). She decided to work in the area of infectious diseases, particularly leprosy which was a major concern in India at that time. She worked with Professor John Turk at the Royal College of Surgeons and Dr RJW Rees at the National Institute for Medical Research, London and then joined Faculty in AIIMS. She first joined Professor GP Talwar's Department of Biochemistry which had just initiated immunology research in India; then moved back to the Department of Pathology (1980), became Head of the new Department of Biotechnology (1986) at AIIMS, and continued to work there as INSA-SN Bose Research Professor even after her retirement (1998). She was invited as Dean of School of Medicine in Asian Institute of Medicine, Engineering and Technology in Malaysia and subsequently as Director of Blue Peter Research Centre (Lepra Research Centre), Hyderabad. She also received DSc (hc) from Pierre and Marie Curie University, Paris (2002). Indira Nath made pioneering contributions to immunology research by her seminal work on cellular immune responses in human leprosy. Throughout her career spanning over three decades, her research contributions centered around mechanisms underlying immune unresponsiveness in man, reactions and nerve damage in leprosy and a search for markers for viability of the leprosy bacillus which is not cultivable. She has over 120 publications, invited reviews, opinion/comments on recent developments in prestigious international journals. She also mentored many MBiotech, MD and PhD students. Indira Nath made notable contributions to education, medical and science policies, and Women Scientists' Issues at both national and international levels. She also contributed to the development of immunology through various courses at AIIMS. She founded and established the Department of Biotechnology at AIIMS. She was Member, Scientific Advisory Committee to Cabinet, Foreign Secretary INSA (1995-97), Council Member (1992-94, 1998-2006) and Vice President (2001-03) of the National Academy of Sciences (India), Allahabad, and Chairperson, Women Scientists Programme, DST (2003). Professor Indira Nath was conferred numerous awards, notably: Padmashri (1999), Chevalier Ordre National du Merite, France (2003), Silver Banner, Tuscanny, Italy (2003), L'Oreal UNESCO Award for Women in Science (Asia Pacific) (2002), SS Bhatnagar Award (1983), JALMA Trust Oration Award by ICMR (1981), Kshanika Award by ICMR (1984), 1st Nitya Anand Endowment Lecture Award by INSA (1987), Clayton Memorial Lecture Award (1988), Om Prakash Bhasin Award (1990), Basanti Devi Amir Chand Award by ICMR (1994), Cochrane Research Award, UK (1995) and RD Birla Award (1995). She was elected Fellow of the National Academy of Sciences (India), Allahabad (1988), Indian Academy of Sciences, Bangalore (1990), National Academy of Medical Sciences (India) (1992), Royal College of Pathology (1992) and the Academy of Sciences for the Developing World (TWAS) (1995).

Some Fundamental Breakthroughs in Communication Theory

Surendra Prasad
Emeritus Professor and Former Director, IIT Delhi

The field of Telecommunications has evolved over the last 150 years, and forms the backbone of the highly connected and networked society we live in today. This has been made possible by huge advances in electronic sciences and technology, However, but for a few major breakthrough results, that came from the fundamental insights (into communication theory) of a few individuals, such advancements would have not taken place at all!. This talk revisits some of these fundamental results and why they were so important to the development of modern communications.

Surendra Prasad received the BTech in electronics and electrical communication engineering from IIT Kharagpur in 1969, and MTech and PhD degrees in electrical communication engineering from IIT Delhi in 1971 and 1974, respectively. He was conferred Doctor of Technology (hc) by Loughborough University, UK. He has been working at IIT Delhi since 1971, where he has been Professor of Electrical Engineering, Coordinator of the Bharti School of Telecom Technology and Management and Deputy Director (F). Presently, he is working as Director, IIT Delhi. He was Visiting Research Fellow at the Loughborough University of Technology (1976-77), and Visiting Faculty Member at the Pennsylvania State University (1985-86). The teaching and research interests of Prasad are in the area of communication engineering and statistical and digital signal processing. He has been Consultant to a number of government agencies as well as to industries in these and related areas. Currently, he is engaged in research in various aspects of statistical signal processing and communications, including wireless communications. Dr Prasad has been a Member of the Governing Body of CSIR and CSIR Society. Dr Prasad is recipient of the Vikram Sarabhai Research Award in Electronics and Telecommunications (1987), SS Bhatnagar Award for Engineering Sciences (1988), and Om Prakash Bhasin Prize for research in Electronics and Communications (1994). He has also been awarded the prestigious JC Bose Fellowship of DST for a period of five years and the meritorious Rajkumar Varshney Award in Systems Theory by the Systems Society of India (2007). He has also been honoured as Distinguished Alumnus of IIT Kharagpur (2007). He has been elected Fellow of the Indian National Academy of Engineering, and Indian Academy of Sciences, Bangalore.

100 Years of X-Ray Crystallography

Professor S. K. Joshi
Distinguished Emeritus Scientist CSIR, Hon. Vikram Sarabhai Professor, JNCASR, NPL

The talk starts with the discovery of x-ray diffraction by crystals by Max von Laue in 1912. The pioneering work of William Bragg and Lawrence Bragg laid the foundation of the field of determination of crystal structure using x-ray diffraction. X-ray diffraction has been progressively used to work out increasingly complex structures. Today approximately 35,000 structures are determined every year. This is possible because of our progress in crystal growth of biological materials, availability of more intense sources of x-rays from synchrotron, and increasing computing power. In 1953 Watson and Crick determined the structure of DNA. This was a great discovery, which left its impact on many fronts. In 1958 John Kendrew determined the first protein structure of the protein myoglobin. In the year 2000 Vekatraman Ramakrishnan, Thomas A Steitz and Ada Yonath and their research groups determined the structure of ribosomes. The ribosome is a large and complex system in a cell. Ribosomes are cell's protein factory, where protein synthesis takes place. One wonders at the tremendous progress we have made in about 100 years of x-ray crystallography! So far 29 Nobel prizes have been awarded to crytallograhic work.

Prof. Shri Krishna Joshi obtained his BSc and MSc (Physics) degrees from Allahabad University. He was appointed as Lecturer in Physics at Allahabad University (1957). He started his research work in measurement of diffuse X-ray scattering from organic crystals for his doctoral degree with K Banerjee and received his DPhil degree (1962). In 1965 he went to USA as a Visiting Lecturer at the University of California, Riverside. Joshi returned in 1967 to join as a Professor of Physics at the University of Roorkee (now IIT Roorkee). In 1986, he was appointed as the Director of National Physical Laboratory (NPL) of CSIR, New Delhi and in 1991 as the Director General of CSIR. He received DSc (hc) from Kumaon University (1944); Kanpur University (1995); Banaras Hindu University (1996) and from University of Burdwan (2005). He did his research on experimental study of diffuse X-ray scattering from organic crystals. This experimental work got him seriously interested in theoretical studies of lattice vibrations. In metals, the frequencies of lattice vibrations depend on the response of conduction electrons to ion motion, and he proposed a successful phenomenological model incorporating electron response. Lattice dynamics of d-electron metals like copper and nickel was worked out using a non-interacting s and d bands model. He started studies of electronic band structure using Korringa- Kohn- Rostoker method. The virtual crystal and the coherent potential approximation were used to calculate the electron states in a number of disordered binary alloys. His group investigated physical properties like electrical conductivity, Hall effect and surface segregation in disorderd binary alloys. Joshi also studied electron correlations in narrow band ferromagnets using the Hubbard model and its generalizations. He proposed a new variational method for the periodic Anderson model to study the ground state behaviour of heavy fermions and estimated the c-axis resistivity of cuprates in high temperature superconductors. Joshi studied transport of electrons in mesoscopic systems, particularly, the conductance of a single quantum dot and a double quantum dot system. He has published 190 papers and guided 20 PhD students. Professor Joshi was the first Chairman of the Board of Governors of IIT Roorkee. He is chair the Governing Councils of Institute of Mathematical Sciences, Chennai, Institute of Physics, Bhubaneswar, and is also Chairman of the Council of the Indian Association for Cultivation of Science, Kolkata. He is a member of the Scientific Advisory Committee to the Cabinet. As DG, CSIR fake rolex watches, he steered CSIR through the initial phase of economic liberalization in India. Professor Joshi received SS Bhatnagar Prize (1972), Meghnad Saha Award (1974), KS Krishnan Memorial Lecture of INSA (1987), FICCI Award (1990), Padma Shri (1991), CV Raman Medal of INSA (1999) and Padma Bhushan (2003). He is a Fellow of the Indian Academy of Sciences, Bangalore (1974) (Vice-President, 1989-91), National Academy of Sciences (India), Allahabad (President, 2001-02) and the Academy of Sciences for the Developing World (TWAS). He is also a Foreign Member of the Russian Academy of Sciences. He was President, Indian Physics Association (1989-90), Materials Research Society (1995-97) and Indian Science Congress Association (1996-97). He was Secretary (1983-86); Foreign Secretary (1989-92) and President (1993-95) of INSA.

Generalized Rough Sets, Uncertainty Analysis and Granular Image Mining

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Pattern recognition and its relevance to data mining are explained with examples. The characteristics of fuzzy sets and rough sets in uncertainty handling and granular computing are highlighted. Significance of their integration as a stronger paradigm for uncertainty handling is explained. Generalized rough sets using the concept of fuzziness in granules and sets, rough-fuzzy entropy and *f*-information granules are described. Their significance in tasks like case generation, measuring image ambiguity and for efficient information mining is stated. Concepts of *fuzzy granular* computing and granular *fuzzy computing* are explained.

While rough-fuzzy case generation with variable reduced dimension is useful for mining data sets with large dimension and size, rough-fuzzy image entropy takes care of the fuzziness in boundary regions as well as the rough resemblance among nearby pixels and gray levels. These are demonstrated for image/video analysis, among others, explaining the role of different kinds of granules and challenging research issues. The talk concludes mentioning their relevance in addressing the Big data issues and other future directions of research.

Sankar Kumar Pal obtained his BSc (Hons) (Physics) (1969), BTech (1972), MTech (1974) and PhD (1979), all from Calcutta University. In 1982, he received another PhD (Electrical Engineering) along with Diploma of the Imperial College (DIC), London. He worked at the University of California, Berkeley and University of Maryland, College Park (1986-87) as Fulbright Fellow, NASA Johnson Space Center, Houston (1990-92, 1994) as NRC Senior Research Associate, Distinguished Visitor of IEEE Computer Society (USA) for Asia-Pacific Region (1997), and US Naval Research Laboratory, Washington DC (2004) as Visiting Scientist. His research career started as CSIR SRF (1975) at Indian Statistical Institute (ISI), Kolkata, where he later became Professor (1987), Distinguished Scientist (1998) and Director (2005). He has made semantic contributions in the field of pattern recognition and machine intelligence using both classical and soft computing paradigms. He pioneered the use of fuzzy sets and neuro-fuzzy approach allowing soft decisions for reducing uncertainty and enhancing performance and flexibility of pattern recognition and image processing methodologies. Notable operators/tools developed by him include: correlation between fuzzy sets, entropy measures, fuzzy-MAT, rough image entropy, fuzzy multilayer perceptron, mixed category perception network, fuzzy feature evaluation network, Hough transform network, optimal stopping time for genetic algorithms, variable-length chromosome genetic classifier, evolutionary-modular-rough-fuzzy knowledge based network, fuzzy-granular case generator, generalized rough-fuzzy c-means algorithm, nearest fragment operator for gene ordering, and fuzzy web surfer model. He demonstrated applications in biometrics, medical imaging, space mission, data mining, bioinformatics and web intelligence. He co-authored 17 books, more than 300 research papers, and also mentored 18 PhD students. He founded the reputable Machine Intelligence Unit of ISI in 1993. In recognition of his outstanding contributions, India's first Center for Soft Computing Research was established at ISI, Kolkata under his leadership. He also served as Asssociate Editor, Guest Editor and Advisory Editor of about 20 internationally reputed journals, Series Editor for World Scientific, Singapore and IOS Press, Netherlands, Founding President, Indian National Academy of Engineering, Kolkata Chapter, and Chairman, IT Academic Council, West Bengal. Professor Pal was conferred the SS Bhatnagar Prize (1990), Vikram Sarabhai Award (1993), JN Fellowship (1993), Om Bhasin Award (1998), GD Birla Award (1999), Khwarizmi International Award, Iran (2000), FICCI Award (2000-01), NASA Tech Briefs Award, USA (1993), Neural Networks Outstanding Paper Award by IEEE (1994), Patent Application Award by NASA (1995), IETE-Wadhwa Gold Medal (1997), INSA-Zaheer Medal (2001), ISC-PC Mahalanobis Birth Centenary Gold Medal (2005-06), JC Bose Fellowship (2007), Vigyan Ratna Award by Science-Culture Organization, West Bengal (2008), and Padma Shri (2013). He was elected Fellow of Institute of Electrical and Electronics Engineers, the Academy of Sciences for the Developing World (TWAS), International Association for Pattern Recognition, International Association for Fuzzy Systems, National Academy of Sciences (India), Allahabad, Indian Academy of Sciences, Bangalore, and Indian National Academy of Engineering.


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through a crystal would be scattered from atoms in the lattice, and
interfere with each other to create a diffraction pattern.
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