

Science Academies Lecture Workshop on
"Materials Physics and Chemistry"
during March 09-10, 2018

**Sponsored by
Science Academies of India**



**Organized by
Department of Physics
DKM College for Women (Autonomous)
Vellore – 632 001**

Science Academies of India
Sponsored
Lecture-Workshop on
"Materials Physics and Chemistry"

March 9th & 10th, 2018

Registration Form

Name of the Participant :
Class / Department :
Name of the Institution :
Designation :
Gender : Male / Female
Address for Communication :

Email-id :
Mobile number :
Signature of the Participant : Signature of the HOD

Contact :
Dr. N. JABENA BEGUM
Assistant Professor,
Department of Physics,
D.K.M. College for Women, Vellore-1.
Email : physicsdkmc@gmail.com
Mobile : 9788808171, 9486948850

NO REGISTRATION FEES

To register, complete and return the registration form accompanying this invitation by Email or post to the coordinator (on or before March 2, 2018) due to practical concerns, the numbers of participants limited to 150. Lunch will be provided.

PARTICIPANTS
Post-graduate
Students,
M.Phil &
Ph.D Scholars,
and Faculty Members

**DEPARTMENT
OF PHYSICS**
DKM College for Women,
(Autonomous),
Sainathapuram, Vellore - 632001.



DKM COLLEGE FOR WOMEN
(AUTONOMOUS)
Sainathapuram, Vellore - 632 001.

Science Academies Lecture Workshop on
'MATERIALS PHYSICS AND CHEMISTRY'

March 9th & 10th, 2018

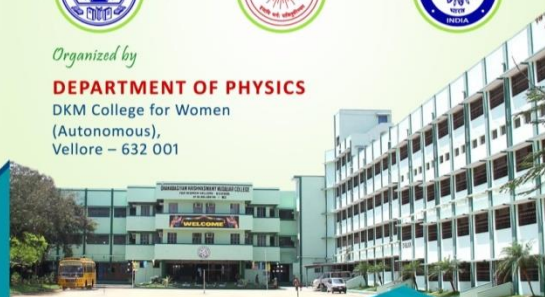
Sponsored by
SCIENCE ACADEMIES OF INDIA

Indian Academy of Sciences (IAS), Bangalore Indian National Science Academy (INSA), New Delhi National Academy of Sciences (NASI), Allahabad



Organized by

DEPARTMENT OF PHYSICS
DKM College for Women
(Autonomous),
Vellore - 632 001



Venue :
D-Block Conference Hall,
DKM College for Women, Vellore.

About the Sponsors

Indian Academy of Sciences (IAS) Bengaluru

The Indian Academy of Sciences, founded in 1934, aims at promoting the progress and upholding the cause of science in pure and applied branches. Major activities include publication of scientific journals and special volumes, organizing meetings of the fellowships and discussions on important topics, recognizing scientific talents, improvement of science education and taking up other issues of concern to the scientific community.

Indian National Science Academy (INSA) New Delhi

The Indian National Science Academy, a premier science academy in the country established in 1935, plays a crucial role in promoting, recognizing and rewarding excellence. Another important task is to publish journals, organize scientific discussions and bring out proceedings and monographs.

National Academy of Sciences (NASI), Allahabad

The National Academy of Sciences, founded in the year 1930, is the oldest Science Academy of the country. The main objective of the Academy is to provide a national forum for the publication of research work carried out by Indian scientists and to provide opportunities for exchange of views among them.

About the Organizers

D.K.M College for women was founded by a man born for the upliftment of the downtrodden women folk in the area, where service is needed and that great Soul is Amara Vellore Vallal N. Krishnaswamy Mudaliar. To serve society through Education is the life mission of our benevolent and philanthropist Founder. The mission is visualized through the foundation of NKM Trust. DKM College for women (Autonomous) established in the year 1972, is a pioneer institution in providing quality and need based education.

At present D.K.M College for women offers 19 UG courses (5-Aided, 14 unaided), 12 PG courses (unaided), 10 M.Phil., courses (unaided) and 11 Ph.D., courses (Full Time & Part Time). The College has a longstanding tradition of academic excellence and this is sustained by the advanced facilities. The college has been reaccredited by (UGC) NAAC in 2009 and got autonomous status in 2006-07. We, at DKM College, strongly believe in the words, "The direction in which education takes a man, will determine his future life".

Convener

Professor **S. Natarajan**, FNA., FASC., FNASC.,
Solid State & Structural Chemistry Unit (SSCU)
Indian Institute of Science (IISc.), Bangalore - 560 012.

Co-ordinator

Dr. N. Jabena Begum
Assistant professor, Department of Physics,
D.K.M. College for Women, Vellore - 632 001.

Chief Patrons

Er. D. Maninathan, B.E., Secretary, DKMC, Vellore - 1.
Dr. T. Sivakumar, M.A., President, DKMC, Vellore - 1.

Patrons

Dr. P.N. Sudha, M.Sc., M.Phil., M.Ed., Ph.D., DCPA, DIPC,
Principal, DKMC, Vellore - 1.

Chairman

Dr. C. Vinothini, Ph.D.,
Head, Department of Physics,
D.K.M. College for Women, Vellore - 632 001.

Eminent Scientists delivering invited lectures:

Professor **S. Natarajan**, FNA., FASC., FNASC.,
Solid State & Structural Chemistry Unit (SSCU)
Indian Institute of Science (IISc.), Bangalore - 560 012.

Professor **R. Ramaraj**, FNA., FASC., FNASC.,
School of Chemistry, Madurai Kamaraj University,
Madurai - 625 021.

Professor **P. Anil Kumar**,
Department of Physics,
Indian Institute of Science,
Bangalore - 560 012.

Professor **S. Vasudevan**, FNA., FASC.,
Inorganic and Physical Chemistry Department,
Indian Institute of Science (IISc),
Bangalore - 560 012.

Report of the Science Academies Lecture Workshop on “Materials Physics and Chemistry”

A two day Science Academies Lecture Workshop was held in DKM College for Women (A), Vellore – 632 001, March 09-10, 2018. The Lecture Workshop was organized by Department of Physics, DKM College for Women (A) in association with Science Academies Bangalore under the leadership of **Prof. S. Natarajan**, Solid State & Structural Chemistry Unit (SSCU), Indian Institute of Science (IISc.), Bangalore as Convener and **Dr. N. Jabena Begum**, Assistant Professor, Department of Physics, DKM College for Women (A), Vellore as Coordinator.



Inaugural Function

This Science Academies' lecture Workshop on “Materials Physics and Chemistry”, a highly multidisciplinary topic of contemporary research interests among various scientific disciplines ranging from physics, chemistry, materials, nanotechnology, etc. This workshop aims to provide a good platform for researchers, academicians and scientist to discuss share and promote their research work in the field of Materials Science and Nanotechnology.

Materials are probably more deep-seated in our culture than most of us realize. Transportation, housing, clothing communication, reaction and food production and virtually every segment of our daily lives is influenced to one degree or another by materials. Materials have contributed to the advancement of a number of technologies, including medicine and

health, information and communication, national security and space, transportation, structural materials, arts and literature, textiles, personal hygiene, agriculture and food science and the environment.

Materials science is an interdisciplinary field involving the properties of matter and its applications to various areas of science and engineering. It includes elements of applied physics and chemistry, as well as chemical, mechanical, civil and electrical engineering. The basis of all materials science involves relating the desired properties and relative performance of a material in a certain application to the structure of the atoms and phases in that material through characterization. Hence, the present workshop on “Materials Physics and Chemistry” was designed to equip students and scholars with the know-how and skills for becoming an expert in materials research.

In this Science Academies’ lecture-workshop, a total of 8 lectures (each of the 4 resource persons gave 2 lectures on each day) of 90 minutes duration (75 min lecture & 15 min discussion) were delivered by the four eminent Indian scientists/teachers covering the fundamental aspects and applications of Materials in various fields. About 150 participants (faculty, Research Scholars and PG students) were actively present in this two days’ event.



Participants in Science Academies Lecture Workshop

The distinguished Resource Persons invited were

- 1. Professor S. Natarajan, FNA., FASc., FNASc.,**
Solid State & Structural Chemistry Unit (SSCU)
Indian Institute of Science (IISc.)
Bangalore-560 012
- 2. Professor R. Ramaraj, FNA., FASc., FNASc.,**
School of Chemistry
Madurai Kamaraj University
Madurai-625 021
- 3. Professor P. Anil Kumar**
Department of Physics
Indian Institute of Science (IISc.)
Bangalore
- 4. Dr. V. Subramanian**
Sr. Principal Scientist
Inorganic & Physical Chemistry
CSIR-Central Leather Research Institute
Adyar, Chennai – 600 020

Two day Science Academies' Lecture workshop was inaugurated on 9th March 2018 at 9.15 AM in D Block Conference Hall, DKM College for Women, Vellore. **Dr. N. Jabena Begum**, Co-ordinator (Assistant Professor, Department of Physics, DKM College for Women) welcomed the participants, resource persons and the faculties from various colleges in and around Vellore. **Er. D. Maninathan**, Secretary, DKM College for Women, Vellore felicitated the gathering. **Dr. P. N. Sudha**, Principal, DKM College for Women, Vellore delivered the presidential address by thanking the Science Academies' of India for sponsoring the lecture workshop. **Prof. R. Ramaraj** delivered the inaugural address aiming to address the various activities of Science Academies' in India. He explained the various initiatives of Science Education Panel of Indian Academy of Sciences, Bangalore such as summer student and teacher's scholarships, refresher programmes, lecture workshops and Journal publications, etc. **Dr. C. Vinothini**, Head and Assistant Professor, Department of Physics, DKM College for Women, proposed the vote of thanks for the inaugural function.



Welcome Address by Dr. N. Jabena Begum and Presidential address by Principal, DKM College

The inaugural session was followed by four lectures. **Prof. R. Ramaraj**, gave a talk on “Nanoscience and Nanotechnology”. Especially he explained the basic concepts of nanotechnology which would impress the students to do research on this topic. Then, in second technical session he specifically highlighted the nanomaterials for solar energy conversion and environmental remediation.

After the lunch break, the third session was started by **Prof. Natarajan** on “Principles of X-ray Diffraction”. He clearly explained that how a crystal scatters the *X-rays* to give a *diffraction pattern*. By showing a sample X-ray diffraction pattern he explained about the determination factors of the position and intensity of the XRD peaks. He also explained the uses of XRD peaks apart from crystal structure determination.

And in fourth session he spoke on “Green pigments”. He highlighted that there is a large interest currently in the development of high performance pigments that show brilliant and bright colors. He also motivated the budding scientists to utilize those brightly colored high-performance pigments with good thermal and chemical stability and additional functionalities, such as infrared reflectivity for various technological applications. At the end of the session, the participants actively took part in the discussion with the speaker and cleared their clarifications.



Lectures delivered by Four Eminent Resource Persons

The second day 10th March, 2018 was started by **Prof. P. S. Anil Kumar**, Department of Physics, IISc., Bangalore. He explained the basic concepts of spintronics. His second talk mainly focused on the nanofabrication for spintronics devices. The participants eagerly interacted with him and clarified their queries. The last two technical sessions were carried out by **Prof. V. Subramanian**, Sr. Principal Scientist, CLRI, Chennai. He delivered the lecture on “Design and development of Dirac materials”. Later in his second talk he covered the topic of interaction of biological molecules with nanomaterials. He explained all the concepts with the research work done in his lab. Through his explanations made the students, especially postgraduate students, to clearly understand the details of his lecture.

In the valedictory program, **Dr. C. Vinothini**, Head and Assistant Professor, Department of Physics, DKMC gave the welcome address, **Prof. R. Ramaraj**, MK university and **Dr. V. Subramanian**, CLRI distributed the attendance certificate to the participants. The participants especially the young delegates expressed their views. They appreciated the organizers and mentioned that the workshop was well organized, lectures were very interesting, the hospitality was wonderful, and they suggested the Department of Physics, DKM College for women, Vellore to conduct many more workshops like this in future with the overwhelming support and sponsor by Joint Science Education Panel of the Academy.



Sharing of their views by young delegates

The valedictory function came to an end with the vote of thanks given by **Dr. N. Jabena Begum**, Coordinator, who thanked all the members actively involved for successful completion of the workshop and the generous sponsor Science Academies of India. The post graduate students, PhD scholars, faculty members of the physics and chemistry department and neighboring colleges in and around Vellore were largely benefited by this program.

Number of Participants who attended the workshop including the names of colleges and Institutions:

Invitation letter with brochures have been sent to **47 colleges/universities in around Vellore**. In addition, Physics and chemistry departments of DKM College for Women have also been invited to encourage their students to participate in this Science Academies Lecture-workshop.

S. No	Name of the College	Number of Students	Number of Teachers	Total
Outside DKM College for Women (A), Vellore				
1.	Muthurangam Govt. Arts, Vellore-02	37	01	38
2.	St. Joseph's College, Trichy	06	02	08
3.	Govt. Thirumagal Mills College, Gudiyattam	34	02	36
4.	Alagappa Govt. Arts, College, Karaikudi	02	-	02
5.	Thiru. Vi. Ka. Govt. Arts College, Thiruvarur	-	01	01
6.	C. Abdul Hakeem College, Malvisharam	01	-	01
7.	Auxilium College, Vellore	01	-	01
8.	Mailam Engineering College, Mailam	-	01	01
	Total	81	7	88
Within DKM College for Women (A), Vellore				
9.	DKM College for Women (A)	45	18	63
	Grand Total	126	25	151