

Two Week International Faculty Development Program on Advanced Computational and Experimental Research in Physics-2021

Day-1 : 13 September 2021 Session:#1

Time : 10.00 AM TO 11.30 AM (IST)

No. of. Registrations : 850+

No. Of Participants Attended : 260 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Organised by :

DEPARTMENT OF PHYSICS,

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, RAMAPURAM, CHENNAI.

The event started with Presidential address by

Dean (E&T),

SRM, IST.

Following the Presidential address, welcome address was given by

Dr. L. Sudha

Professor & Head

Department of Physics

Resource Person

Dr. Rajdeep Singh Rawat.

Professor & Head,

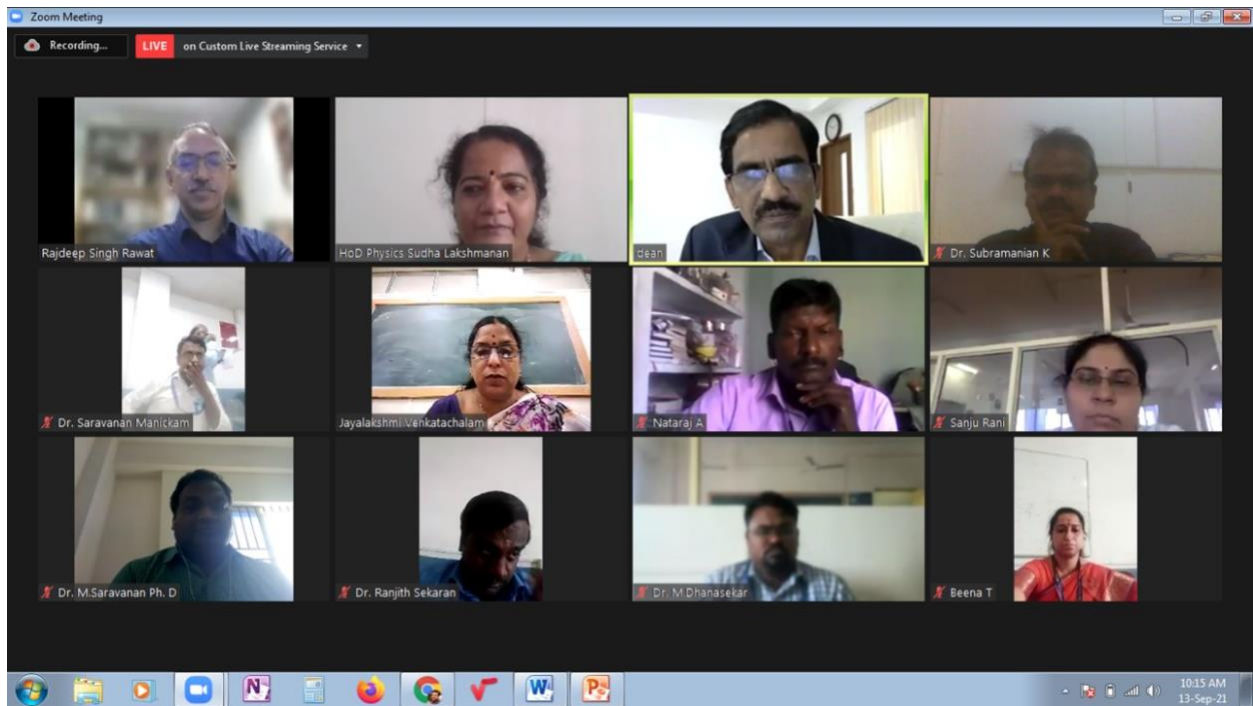
Department of Natural Sciences & Science Education,

Nanyang Technological University,

Singapore.

The Resource Person has delivered a wonderful talk on “**Plasma processing as a novel tool for high performance electrode material synthesis for energy storage and conversion devices**”. He gave introduction on Energy storage and conversion. He also elaborated Li ion battery and explained the Low temperature C-plasma and N-Plasma processing.

The participants actively interacted with the resource person and raised many questions.



Speaker Profile:

- **Name of the speaker** : Dr. Rajdeep Singh Rawat
- **Designation** : Professor & Head
- **Affiliation** : Department of Natural Sciences & Science Education, Nanyang Technological University, Singapore.
- **Education Details:**
 - MSc in Physics from University of Delhi, India
 - BSc Physics Hons, HansRaj College, University of Delhi, India.
 - PhD in Experimental Plasma Physics from University of Delhi, India
- **Publications** :
 - He has published about 240 Journal papers and over 70 conference papers with >6550 citations and H-index of 43.
- **Book Publications** :
 - **In 2017 he has edited an book named** *Plasma Science and Technology for Emerging Economies – An AAAPT Experience*
 - He Published theb *Proceedings of the 15th Asian Physics Olympiad* in 2015.
- **Area of Research:**
 - Sustainable green plasma chemistry based synthesis of vertical graphene using natural carbon precursor and its loading with suitable active materials for applications in energy storage devicesNonlinear Dynamics
 - Developing sustainable carbon plasma processing of different metal-oxide/sulphide nanoframeworks for their reduction to metals with simultaneous vertical graphene growth and carbon overcoats for Li and Na ion storage applications Fiber for Sensing applications
 - 3D porous nanostructured materials synthesis with simultaneous nitrogen doping using low temperature plasmas to make highly efficient and cost effective electrocatalyst with very high hydrogen and oxygen evolution reactions
 - High perpendicular anisotropy materials such as FePt and CoPt synthesis and devising strategies to reduce the phase transition temperature (or to achieve direct synthesis) to desired hard magnetic L10 phase
 - (a) FE/FM hetero-interfaces voltage controlled magnetization switching, (b) high spin-orbit coupling materials and (c) insulator-graphene/metal Rashba interface designing, and (d) high charge to spin current conversion efficiency spin Hall materials for spintronics applications.
 - performing fundamental studies on pulsed plasma devices such as Dense Plasma focus (DPF) and Pulsed Laser Deposition (PLD) and their applications



Work Experience:

- Chair, Plasma Innovation Prize Committee, Association of Asia Pacific Physical Society – Division of Plasma Physics, 2020.
- He has given invited lecture in many countries like Thailand, Chile, Italy, Austria, Poland
- **Awards & Achievements:**
 - Every year he receives gold and silver medal in International Olympiad

Day-2 : 14 September 2021 Session:#2

Time : 06.30 PM TO 07.30 PM (IST)

No. Of Participants Attended : 266 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person:

Dr. S.Sudhakar.

Principal Scientist,

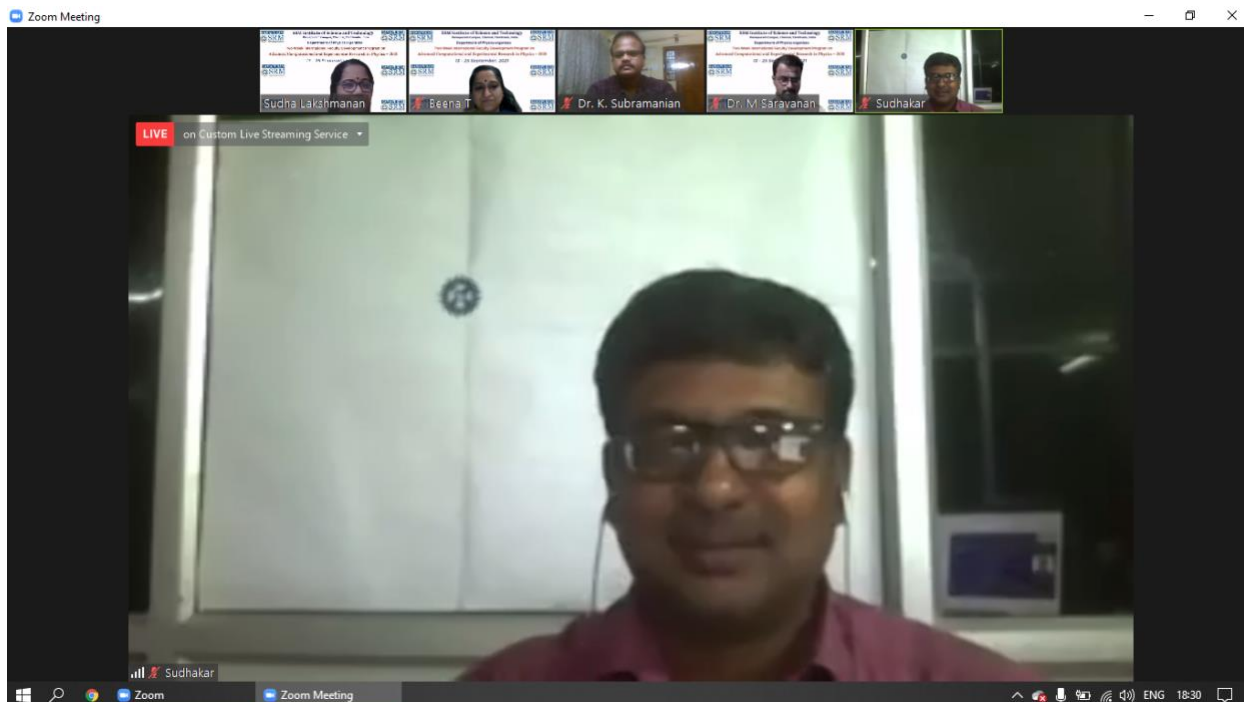
CSIR-Central Electrochemical Research Institute (CECRI)

Karaikudi

The Resource Person delivered a wonderful talk on “**Lithium ion battery for EV application**”

He explained about the fabrication and efficiency of Lithium ion batteries and elaborated the recent application of Lithium ion batteries in electric vehicles and Mobile phones.

The participants actively interacted with the resource person and raised many questions.



REC LIVE

CSIR Opportunities to Students

- Junior Research Fellowship (JRF)
- Senior Research Fellowship (SRF)
- Travel Fellowships
- Internships / project guidance
- Skill Development programs / courses
- Financial Support to conduct conferences / symposia / workshops
- Grant in aid projects

Honouring the Innovation of Young Minds

“India's innovation is a great blend of economics and efficacy. We have worked to create a robust ecosystem for innovation, incubation, research and development in our country.”
-Narendra Modi

CSIR Innovation Award for School Children 2021

Eligibility

Any Indian school going student

- Up to class XII
- Below 18 years of age on 1st January 2021

Honouring the Innovation

15 Awards for Novel Scientific and Technological Concept/Idea/Design/ Solution to Existing Societal Problems

FIRST PRIZE	SECOND PRIZE	THIRD PRIZE	FOURTH PRIZE	FIFTH PRIZE
₹ 1 lakh	₹ 50,000- (2 Nos.)	₹ 30,000- (3 Nos.)	₹ 20,000- (4 Nos.)	₹ 10,000- (5 Nos.)

Submit entries in hard copy along with authentication letter from the school

Extended Date of Entry Submission: Till 31st May, 2021

Complete entries to reach:-
Head,
CSIR Innovation Protection Unit,
Vignani Bhawan Bhawan, 16-Bahadur Vihar Marg,
Special Institutional Area, New Delhi-110067

For more information, visit www.csir.res.in

9/14/2021

Sudhakar's screen

5

Speaker Profile:

- **Name of the speaker** : Dr. S. Sudhakar
- **Designation** : Senior Scientist
- **Affiliation** : Electrochemical Power Sources Division
CSIR- CECRI, Karaikudi , Tamil Nadu, INDIA - 630003.
- **Publications** : 60
- **Book Publications** : 2

Areas of Research:

- Silicon Thin Film Solar Cells: Development of Very High Frequency – PECVD process to achieve high growth rate of doped and undoped layers of amorphous & micro / nano-crystalline silicon thin films. Fabrication of single and tandem junction amorphous & micro-crystalline silicon p-i-n solar cells. Simulation studies on HIT and p-i-n solar cells.
- Lithium ion batteries: Synthesis of advanced cathode materials for lithium ion batteries. Fabrication and testing of lithium ion cells (cylindrical, pouch and prismatic) for e-mobility and energy storage applications.
- **Work Experience** :
 - Assistant Professor, Dongguk University, Seoul, Republic of Korea (March 2009 – July 2010)
 - Post Doctoral Researcher, Chonbuk National University, Jeonju, Republic of Korea (August 2010 – May 2011)
 - Scientist - CSIR : National Physical Laboratory (Nov 2011 – Nov 2015)
 - Senior Scientist - CSIR : National Physical Laboratory (Nov 2015 – Aug 2017)
 - Senior Scientist - CSIR : Central Electrochemical Research Institute (Aug 2017 – Till Date)

Awards & Achievements:

- Junior Research Fellowship : Sponsored research project by Inter-University Accelerator Centre (IUAC), New Delhi (May 2004 – February 2008).
- Senior Research Fellowship : CSIR-SRF (April 2008 – April 2009).
- Travel Fellowship Award : Travel Fellowship Award by Department of Science and Technology, Government of India to participate and present research work in The 4th Asian Conference on Crystal Growth and Crystal Technology, Tohoku University, Sendai, Japan (May 21 – 24 2008)
- Young Scientist Award : Japanese .
- Young Scientist Award (2008) by Global COE Materials Integration, Tohoku University, Sendai, Japan.



Day-3 : 15 September 2021 Session:#3

Time : 10.00 AM TO 11.00 AM (IST)

No. Of Participants Attended : 200 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource Person

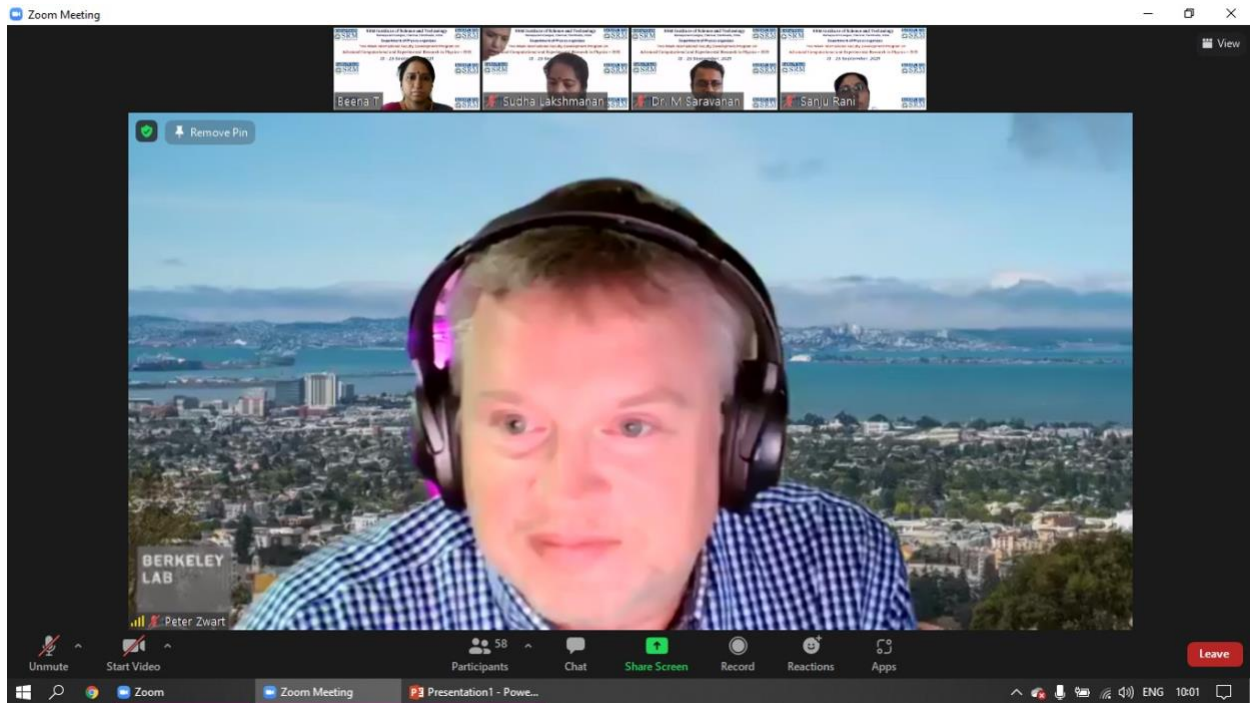
Dr. P. H. Zwart

Staff Scientist

**Molecular Biophysics and Integrated Bio imaging & Advanced Mathematics
for Energy Research Applications,
Lawrence Berkeley National Laboratories,
Berkeley, USA.**




The Resource Person has delivered a wonderful talk on “**AI-assisted high throughput infrared spectromicroscopy**”. In his lecture he explained clearly about the autonomous infrared microscopy.

The participants actively interacted with the resource person and raised many questions.

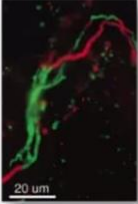


LIVE on Custom Live Streaming Service

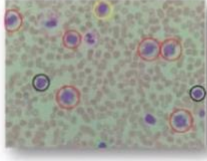
You are viewing Peter Zwart's screen View Options

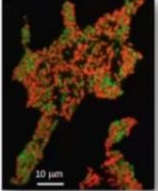
Towards High-Throughput Autonomous IR Microscopy




Gage DJ, *Microbiol Mol Biol Rev* 2002



Saad AA, *Intechopen*, 2020



Holman HYN et al, *PNAS*, 2009




Valdespino-Castillo PM et al, *Front Microbiol*, 2009

Infrared spectromicroscopy images heterogeneous samples, with local complexity and information hotspots

Infrared spectromicroscopy provides insights in the location and abundance of chemical fingerprints in (geo)biological samples and complex materials.

It is a non-destructive technique, but very time consuming: a 70 um x 100 um sample takes about 9 hours to measure.



Peter Zwart

Speaker Profile:

- **Name of the speaker** : **Dr. P. H. Zwart**
- **Designation** : Staff Scientist
- **Affiliation** : Molecular Biophysics and Integrated Bio imaging & Advanced Mathematics for Energy Research Applications, Lawrence Berkeley National Laboratories, Berkeley, USA.
- **Details of UG & PG studies:**
 - M.Sc. Chemistry, University of Amsterdam, Faculty of Chemistry, Laboratory of Crystallography (1995 – 1999).



- **Details of Ph.D** :
 - **Ph.D.**, -student at European Molecular Biology Laboratory (EMBL), Hamburg Outstation, in the group of Dr. V.S. Lamzin (1999 – 2003).
- **Area of Research:**
 - Experimental and theoretical crystallographic methods, (Bayesian) Statistics, Protein and Small Molecule Crystallography, Powder Diffraction, Structural Biology

Work Experience :

- Beamline scientist for BCSB beamlines 5.0.1, 5.0.2 and 5.0.3 (<http://bcsb.als.lbl.gov>), Advanced Light Source, Berkeley National Laboratories, CA, USA (2007 – Present).
- **Postdoctoral fellow** in the group of Dr. Adams, Lawrence Berkeley National Laboratories, Berkeley, CA, USA (2005 – 2007).
- **Postdoctoral fellow** with SAIC-Frederick Inc. in the group of Dr. Z. Dauter located at the Argonne National Laboratories, Argonne, IL, USA (2004 – 2005).
- **Postdoctoral fellow** with SAIC-Frederick Inc. in the group of Dr. Z. Dauter located at the NSLS, Brookhaven National Laboratories, Upton NY, USA (2004 – 2005).
- **Postdoctoral fellow** at European Molecular Biology Laboratory (EMBL), Hamburg Outstation, in the group of Dr. V.S. Lamzin (2003 – 2003).
- Research project at the European Synchrotron Radiation Facility (ESRF) in the group of Dr. H. Graafsma on the crystal structure of deuterated Potassium Phosphate in a static electric field (1998 – 1999).
- Research project at the European Molecular Biology Laboratory (EMBL) in the group of Dr. V.S. Lamzin on the structure solution and refinement of SS-LADH (1997 – 1998).

Awards & Achievements:

- EMBL Fellowship to carry out PhD-research in the group of Dr. Lamzin (1999).
- Unilever Research Price for undergraduate work (2000).

Day-3 : 15 September 2021 Session:#4

Time : 2.00 PM TO 3.00 PM (IST)

No. Of Participants Attended : 200 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource Person

Dr. Alessandro Alberucci

Post-doc Researcher,

Friedrich-Schiller-Universitat Jena, Germany.

The Resource Person has delivered a wonderful talk on “**Frontiers in Ultrafast Optics**”. In his lecture he explained clearly about the chirped pulse amplification and non- linear dynamics.

The participants actively interacted with the resource person and raised many questions.

You are viewing Alessandro Alberucci's screen View Options

View



Institute of Applied Physics
Friedrich-Schiller-Universität Jena

Frontiers in Ultrafast Optics

A. Alberucci
Institute of Applied Physics, Abbe Center of Photonics, Friedrich-Schiller-Universität Jena, Albert-Einstein-Str. 15, 07745 Jena, Germany

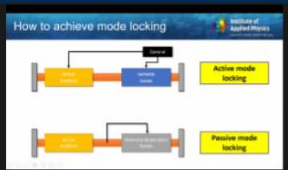
Alessandro.alberucci@gmail.com www.iap.uni-jena.de

Unmute Start Video Participants 101 Chat Share Screen Record Reactions Apps Leave

Alessandro Alberucci

Switch to Shared Content LIVE on Custom Live Streaming Service You are viewing Alessandro Alberucci's screen View Options

View



FRIEDRICH-SCHILLER-UNIVERSITÄT JENA

Alessandro Alberucci

Unmute Start Video Participants 159 Chat Share Screen Record Reactions Apps Leave

Speaker Profile:

- **Name of the speaker** : Dr. Alessandro Alberucci
- **Designation** : Post-doc Researcher
- **Affiliation** : Friedrich-Schiller-Universitat Jena,

Germany

- **Details of UG & PG studies:**

➤ January 2005 - December 2012

Università Degli Studi Roma Tre, Italy.

- **Details of Ph.D.,** :

➤ January 2013 - January 2015

Università Degli Studi Roma Tre,

Department of Electronic Engineering, Rome, Italy.



- **Publications** : 142

- **Funded projects** : 4

- **Area of Research :**

➤ Optoelectronics, Electronics And Communication Engineering, electronic Engineering, Photonics, Numerical Simulation, Nonlinear Optics, Optical Physics, Plasmonics, Nonlinear Dynamics

- **Work Experience :**

➤ Before came to Jena, he studied and worked in Rome and as a Postdoc at Tampere University of Technology in Finland.

- **Awards & Achievements:**

➤ Dr. Alessandro Alberucci has been designed as an OSA 2020 Senior Member.

➤ Most of his works concentrated on the advancement of the knowledge about the self-trapping of light in liquid crystals.

➤ Another major contribution is the conception of a new type of electromagnetic waveguides based upon the Pancharatnam-Berry phase, highlighted in the special "Optics 2019" December issue of OPN (Optics & Photonics News).

Day-4 : 16 September 2021 Session:#5

Time : 03.00 PM TO 04.00 PM (IST)

No. Of Participants Attended : 205 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person:

Dr. Maxime Chambonneau

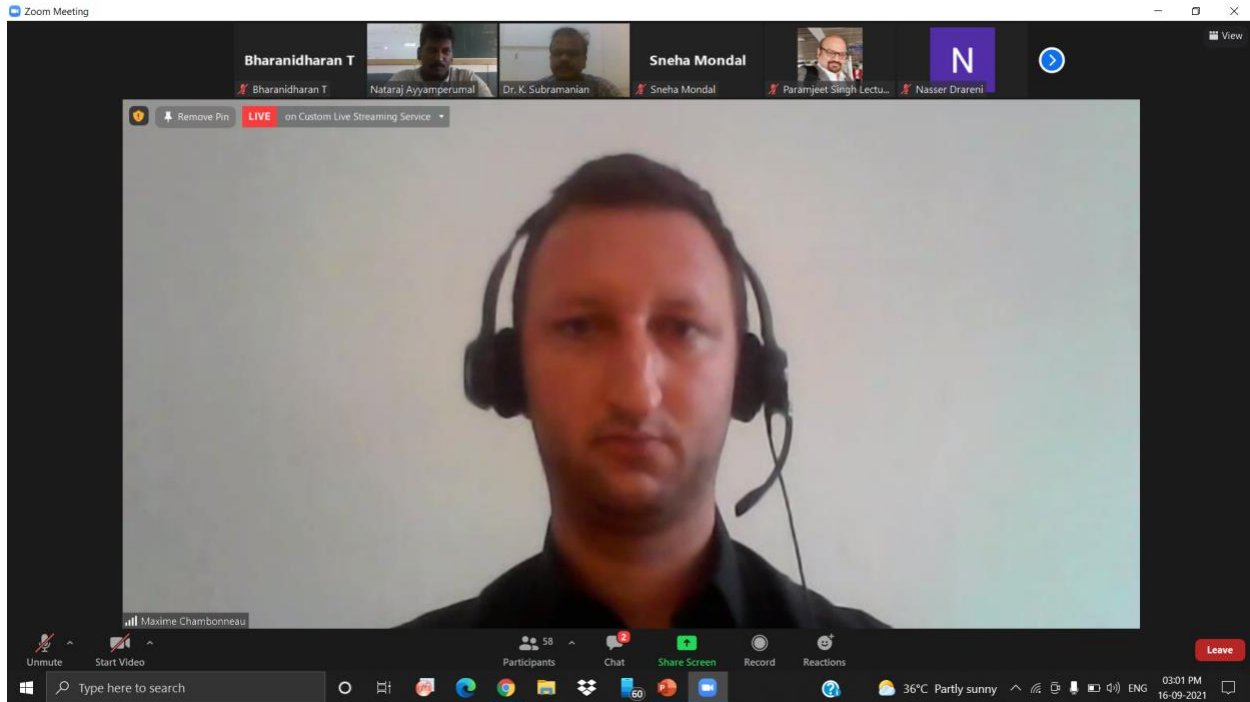
Post-doc Researcher

Friedrich-Schiller-Universitat Jena, Germany

The Resource Person delivered a wonderful talk on “**In-volume Laser-silicon Interaction**”

He explained about the 3D ultrafast laser silicon interactions and elaborated the recent application of non-linear propagation simulations.

The participants actively interacted with the resource person and raised many questions.



Zoom Meeting

You are viewing Maxime Chambonneau's screen View Options

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Single-pulse irradiations

maxime.chambonneau@uni-jena.de

Institute of Applied Physics
Friedrich-Schiller-Universität Jena

- Narrow focusing depth window (100–120 μm) for which damage is repeatable for $E_{\text{in}} \geq 1.9 \mu\text{J}$
- Window behavior \rightarrow Consistent with **nonlinear propagation simulations**

The left graph shows Bulk modification probability (Y-axis, -0.1 to 1.1) versus Focusing depth (μm) (X-axis, 0 to 320). Four data series are plotted for different pulse energies: 1.5 μJ (blue diamonds), 1.7 μJ (green squares), 1.9 μJ (yellow triangles), and 2.1 μJ (red circles). All series show a peak around 100-120 μm .

The right graph shows Peak intensity (W/cm^2) (left Y-axis, 0 to 3.0×10^{13}) and Peak electron density (cm^{-3}) (right Y-axis, 0 to 5.0×10^{21}) versus Focusing depth (μm) (X-axis, 0 to 350). A red bar indicates the surface damage region. Data points for peak intensity (green triangles) and peak electron density (blue diamonds) are plotted, showing a sharp increase around 100-120 μm .

Participants (158)

Q. Find a participant

Participant	Status
Bharanidharan T (Me)	🔴
Dr. K. Subramanian (Host)	🔴
Maxime Chambonneau (Co-host)	🟢
Beena T (Co-host)	🔴
HoD Physics Sudha Lakshmi (Co-host)	🔴
Nataraj Ayyamperumal (Co-host)	🔴
170473Galaxy M30	🔴
A md zameer hussain Basha	🔴
Adlin Steffy	🔴
Admin	🔴
ALAGURAJA S	🔴
Amirah	🔴
Amit Kumar	🔴
Amiya Ranjan Malik	🔴
Amutha Arjunan	🔴
Anitha Kasinathan	🔴

Unmute Me

35°C Light rain

03:46 PM 16-09-2021

Speaker Profile:

- **Name of the speaker** : **Dr. Maxime Chambonneau**
- **Designation** : Post-doc Researcher
- **Affiliation** : Friedrich-Schiller Universität Jena,

Germany.

- **Education Details :**

- Engineering degree in mathematical and mechanical modeling in 2011.
- **Aix-Marseille University (France)** in 2014 under the supervision of Laurent Lamaignère, Guillaume Duchateau, and Jean-Yves Natoli.
- From 2018, he is a post-doctoral researcher at the Institute of Applied Physics in Jena (Germany), under the supervision of Stefan Nolte."

- **Publications** : 68

- **Area of Research :**

- Experimental and theoretical aspects of interactions between infrared laser pulses and silicon, with applications in microelectronics and optical functionalization.
- Maxime Chambonneau currently works at the Ultrafast Optics group of Institute of Applied Physics, Friedrich Schiller University Jena. Maxime does research in Optics, Plasma Physics and Solid State Physics.

Day-5 : 17 September 2021 Session:#6

Time : 11.00 AM TO 12.00 PM (IST)

No. Of Participants Attended : 236 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person:

Dr. Neil Broderick

Professor,

Department of Physics,

The University of Auckland,

New Zealand

The Resource Person delivered a wonderful talk on “**Nonlinear Dynamics in Coupled Optical Resonators**”

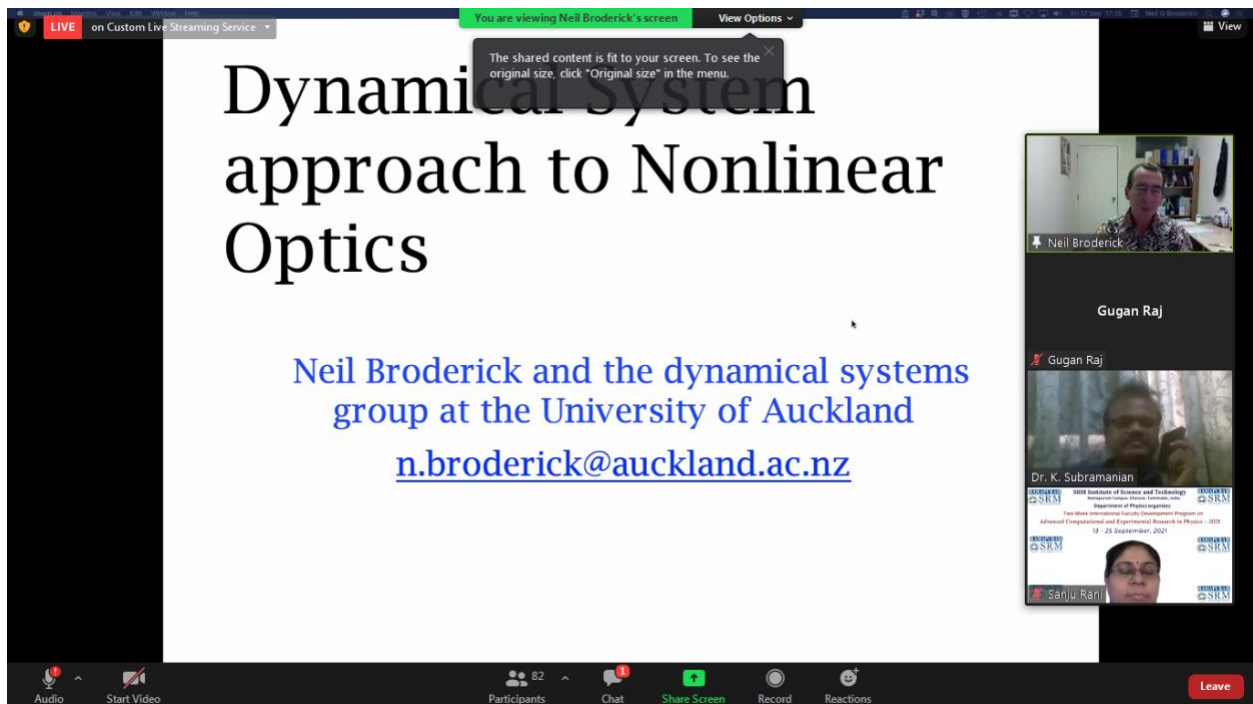
He explained about the Mathematical model for the coupled passive resonators and elaborated about Q-switched fiber laser and its applications

The participants actively interacted with the resource person and raised many questions.

Speaker Profile:

- **Name of the speaker :** Dr. Neil Broderick
- **Designation** : Professor, Department of Physics,
- **Affiliation** : The University of Auckland, New Zealand.
- **Details of Ph.D :**
 - Neil received his PhD in 1996 and joined the Department of Physics in 2011 as Associate Professor.
- **Area of Research:**
 - Fibre Lasers
 - Nonlinear optics
 - Photonic crystal fibres
 - Optical Sensors
 - Micromachining





Day-6 : 18 September 2021 Session:#7

Time : 06.00 PM TO 07.00 PM (IST)

No. Of Participants Attended : 257 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person

Dr. Ashish Badiye

Head of the Department and Assistant Professor

Department of Forensic Science,

Government Institute of Forensic Science,

Nagpur, Maharashtra,

India

The Resource Person delivered a wonderful talk on

“Ques.: We can all see, but can you observe?”

Ans.:- Forensic Science”

He explained about Physics and its application in Forensic Science and elaborated the latest technologies such as Nanotechnology applied in Forensic Science.

The participants actively interacted with the resource person and raised many questions.

LIVE



Forensic Science Fields by Ashish Badiye is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

Dr. Ashish Badiye HOD & Asst. Prof. Dept. of Forensic Science's screen

Zoom

Leave

LIVE

WHAT IS FORENSIC SCIENCE?

- The word Forensic is derived from a Latin word '*forensis*' which means 'forum'.
- The *application* of various *scientific methods* and *techniques* for the *purposes of Justice*.

Dr. Ashish Badiye, Head & Asst. Prof. Dept. of Forensic Science, Govt. Institute of Forensic Science, Nagpur
(Only Forensic Science Institute in India to be ranked in 101-150 band in Colleges Category: NIRF 2020)

Unmute Start Video Share Participants 114 More

Speaker Profile:

- **Name of the speaker** : Dr. Ashish Badiye
- **Designation** : Head of the Department & Assistant Professor
- **Affiliation** : Department of Forensic Science, Government Institute of Forensic Science, Nagpur, Maharashtra, India.



- **Details of UG & PG studies:**
 - UPMaster's Degree, **Forensic ScienceA, Amity Institute of Forensic Sciences, Amity University, Noida, 2009 - 2011.**
 - Bachelor's Degree, **Forensic ScienceA, Amity Institute of Forensic Sciences, Amity University, Noida, UP. 2006 - 2009**
- **Details of Ph.D :**
 - Ph.D.**Forensic Science, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore (2017 - 2020)**
- **Publications** : 56
- **Area of Research:**
 - Forensic Science
 - Fingerprints
 - Latent Prints
 - Crime Scene Investigation
 - Epidemiology
- **Work Experience** :
 - **Head of the Department**

Department of Forensic Science, Government Institute of Forensic Science, Nagpur
2014 - Present7 years
Maharashtra, India

- **Assistant Professor, Department of Forensic Science**
Government Institute of Forensic Science, Nagpur
Oct 2011 - Present10 years
Maharashtra, India

- **Awards & Achievements:**
 - Awarded Best Poster Presentation Award for “Performance Enhancing Drugs in Sports ” at 2nd International Science Congress, by International Science Congress Association, held at Bon Maharaj Engineering College, Mathura (Dec 2012)
 - Awarded Best Paper Presentation Award (3rd Prize) for “Improving Security Features in Important Documents to Avoid Counterfeiting” at 3rd National Conference on “Latest Technologies & Their Applications in Forensic Science and Digital Forensics” (NCFS-2012) held at Institute of Forensic Science, Institute of Science Campus, 15, Madam Cama Road, Mumbai (6th and 7th March, 2012).
 - Awarded Best Poster Presentation Award (3rd Prize) for “Date Rape Drug- Rohypnol” at DNA 2011, 3rd International Conference on The Science of DNA Fingerprinting...Past, Present and the Future organized by BioAxis DNA Research Centre Private Limited, Hyderabad (A.P.)
 - **UGC-NET-JRF, Jun 2010**

Day-7 : 19 September 2021 Session:#8

Time : 11.00 AM TO 12.00 PM (IST)

No. Of Participants Attended : 227 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person

Dr. B. Archana

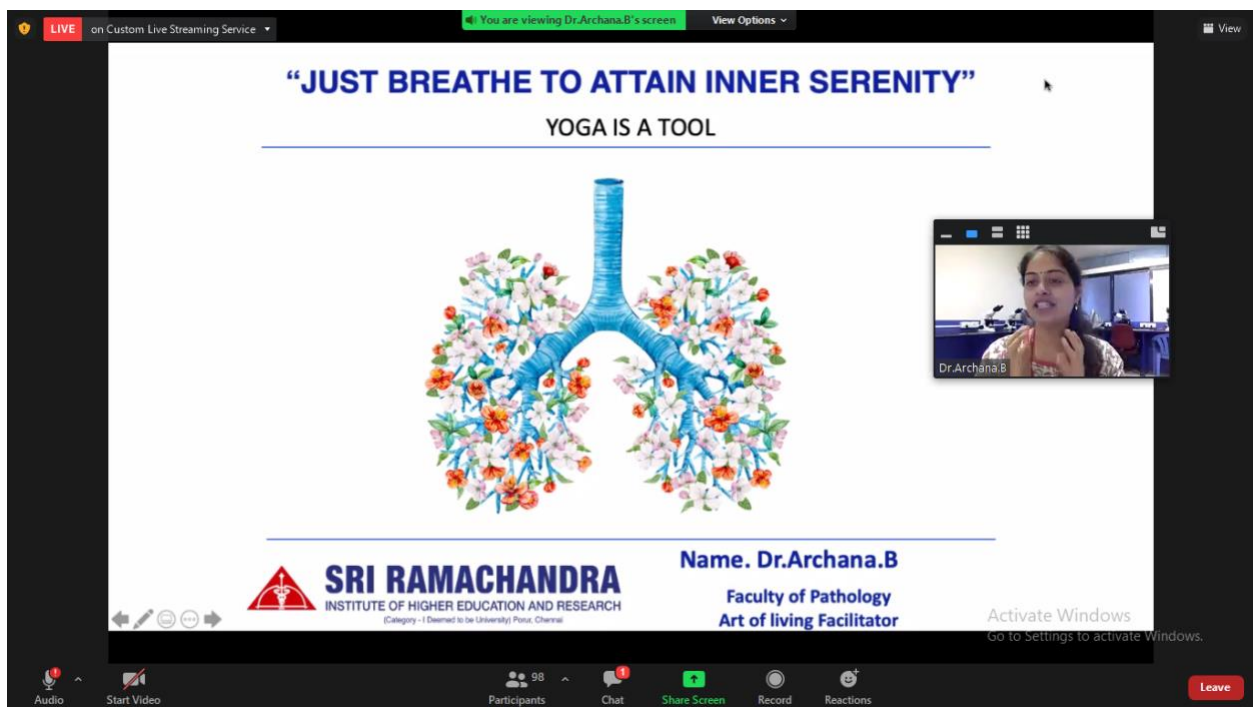
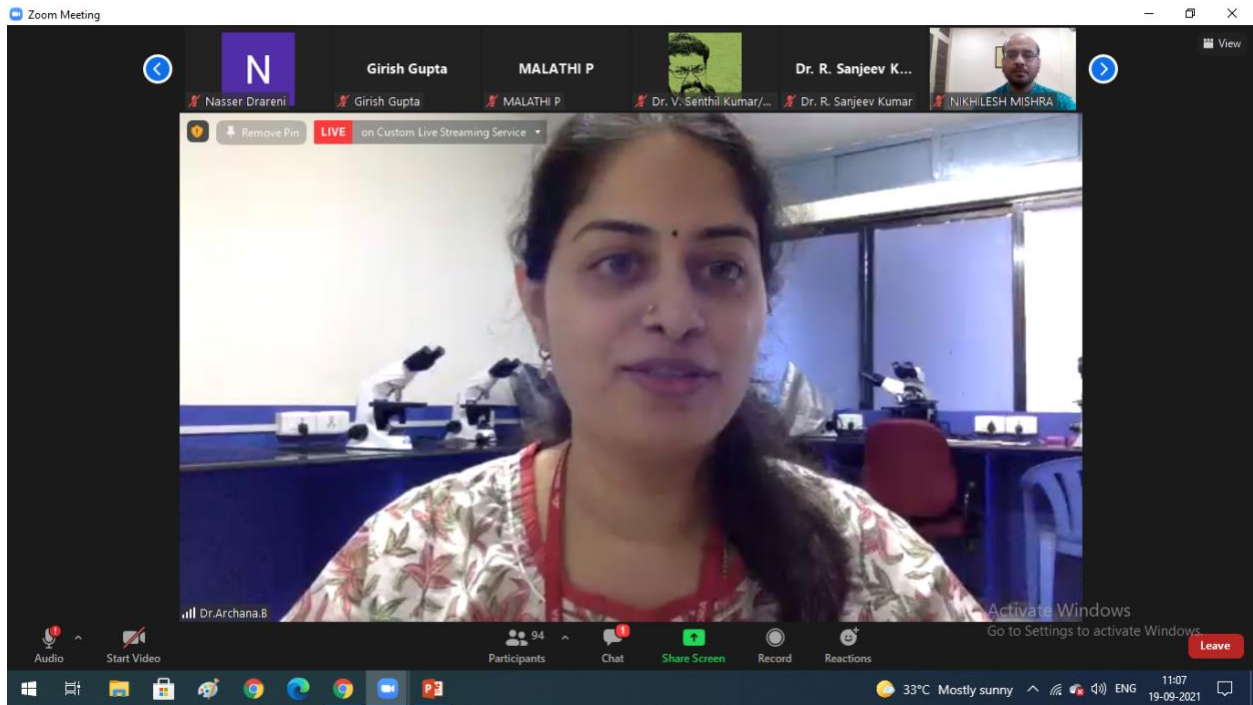
Assistant Professor

Department of General Pathology, Sri Ramachandra Institute of Higher Education and Research, Chennai, India

The Resource Person delivered a wonderful talk on “**Just Breathe to attain Inner Serenity: Yoga is a Tool**”

The resource person explained about the importance of yoga and Sudarshan Kriya and also gave some practical exercises to the participants. The session was very lively. The Art of living associate Mrs Shobana Sridhar taught meditation to the participants and Mr Nikilesh shared his experiences with Art of living

The participants actively interacted with the resource persons and raised many questions.



Speaker Profile:

- **Name of the speaker** : **Dr. B. Archana**
- **Designation** : Assistant Professor,

Department of General
Pathology

- **Affiliation** : Sri Ramachandra Institute of
Higher Education & Research,
Chennai, India.
- **Details of UG & PG studies:**
 - Diploma in Emergency Medicine from Apollo hospitals
Bangalore , MD in pathology.
- **Details of Ph.D:**
 - Currently doing PhD and working as an Assistant Professor in Sri Ramachandra medical college
- **Awards & Achievements** :
 - Has presented in various academic conferences and also won awards
 - Also an Art of living teacher since 11 years, taught the Meditation and Breath workshop to many
across India. teach yoga, meditation and Sudarshan kriya
 - Invited as an Guest speaker in many institutions



Day-8 : 20 September 2021 Session:#9

Time : 02.30 PM TO 3.30 PM (IST)

No. Of Participants Attended : 230 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person:

Dr. M.S. Mani Rajan

Assistant Professor,

Department of Physics,

University College of Engineering,

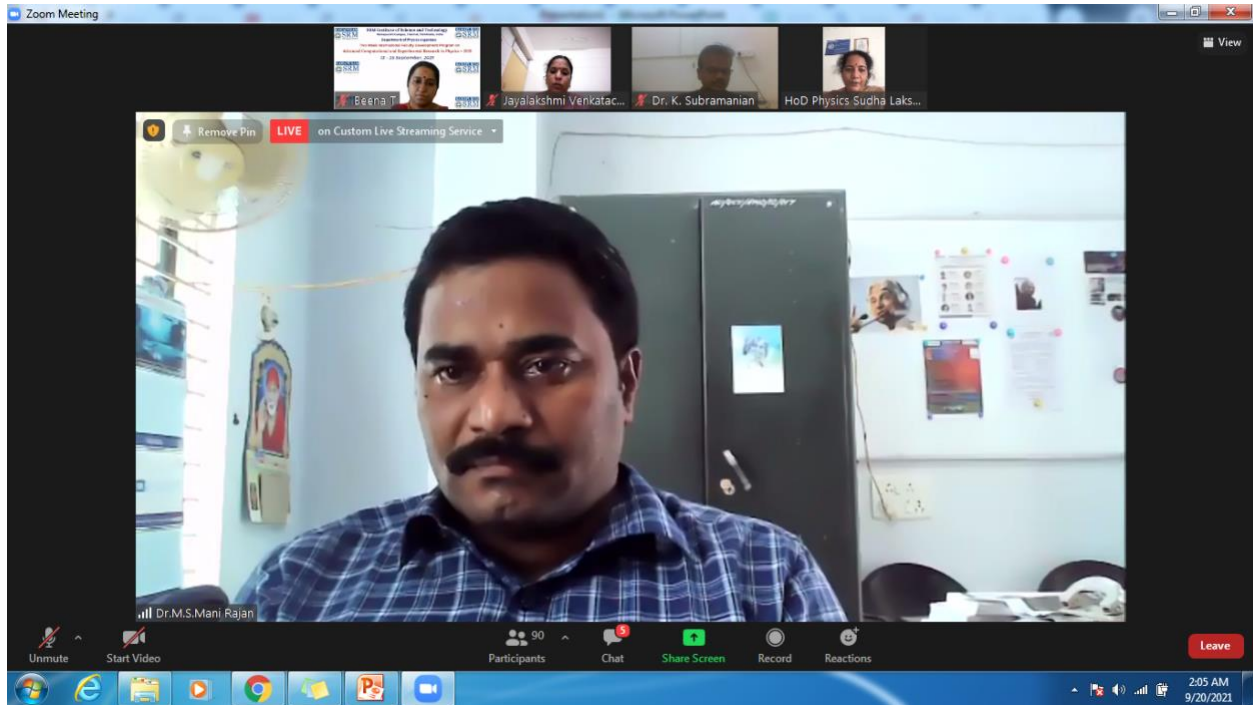
Anna University,

Ramanathapuram, India

The Resource Person delivered a wonderful talk on “**Photonic Crystal Fiber for Biosensing Applications**”

He explained about the Photonic crystals Fibers, Solid core Fiber and their Designing Parameters

The participants actively interacted with the resource person and raised many questions.



Zoom Meeting interface showing a live stream of Dr. M.S. Mani Rajan's screen. The screen displays a presentation slide titled "Advantages over conventional fiber".

Advantages over conventional fiber

- Endlessly single mode
- Large mode area
- Tunable dispersion
- High birefringence
- Tunable large optical nonlinearity
- Very low loss

High design flexibility

The slide also features a small video thumbnail of Dr. M.S. Mani Rajan in the top right corner. The Zoom interface includes a top bar with 'LIVE on Custom Live Streaming Service' and a green status bar indicating 'You are viewing Dr.M.S.Mani Rajan's screen'. The bottom toolbar shows 110 participants and various controls like Unmute, Start Video, Chat, Share Screen, Record, and Reactions. A red 'Leave' button is present in the bottom right corner.

Speaker Profile:

- **Name of the speaker** : **Dr. M. S. Mani Rajan**
- **Designation** : Assistant Professor,
Department of Physics
- **Affiliation** : University College of Engineering,
Anna University,
Ramanathapuram, India.

- **Details of UG & PG studies:**

- M. Phil-Bharathidasan University, Trichy (2007-2008).
- M. Sc-Physics, NMSSVN College, Madurai (2002-2004).
- B. Sc-Physics, Vivekananda College, Madurai (1999-2002)

- **Details of Ph.D** :

- Ph. D, Physics, CEG, Anna University, Chennai (2008-2014).

- **Publications** : 88

- **Area of Research :**

- Theoretical Physics
- Nonlinear Dynamics
- Optical Fiber Communication
- Fiber for Sensing applications
- Computational Physics

- **Work Experience :**

- Worked as Project Fellow at Pondicherry University, Kalapet, Puducherry – 605 014 during 2005 to 2007 under Raja Ramanna Fellowship funded by Department of Science & Technology, New Delhi.
- Worked as a Lecturer in Rajalakshmi Institute of Technology, Chennai for 2 years
- Worked as a Lecturer in KCG College of Technology, Chennai for a year

- **Awards & Achievements:**

- VIFA 2016 -Young Faculty Award for outstanding contribution in the field of “Optical Fiber Communication” on July 9, 2016 at Hotel Green Park, Chennai.
- 100% result in First Year ECE in Engineering Physics-I in Anna university examination (Jan 2011).
- Life member in Indian Physics Association (IPA)
- Life member in Photonics Society of India (PSI)
- Life member in Indian Laser Association (ILA)



Day-8 : 20 September 2021 Session:#10

Time : 07.00 PM TO 08.00 PM (IST)

No. Of Participants Attended : 250 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person:

Dr. Pawel Hawrylak

Professor, Department of Physics

University of Ottawa, Canada

The Resource Person delivered a wonderful talk on ‘**Designing Materials at a nanoscale**’

He explained about Designing Materials at the nanoscale and Energy Efficient Electronics and Photonics, Critical challenges and power dissipation

The participants actively interacted with the resource person and raised many questions.

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Pawel Hawrylak

Unmute Stop Video Security Participants 133 Chat Share Screen Reactions Apps More Leave

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Quantum Theory of Materials

DESIGNING MATERIALS AT THE NANOSCALE

J.MANALO (1),Y.SALEEM(1),M.CYGOREK(1),A. ALTINTAS(1),A. DUSKO(1)
M. KORKUSINSKI(1,2), L. SZULAKOWSKA(1), A.GRAN(1),
B.JAWOROWSKI(1,3), P. POTASZ(1,3),
I.OZFIDAN(1,4), O. VOZNYI(1,5), C.Y.HSIEH(1,6), Y.P.SHIM(1,7),
A.RENE(1), A. FORTE(1), R.CHERITON(1), A. TROJNAR(1), M.VLADISAVLJEVIC(1),
H. FARIA(1,11), E.KADANTSEV(1,2), D.GUCLU(10)
P. HAWRYLAK(1)

1. UNIVERSITY RESEARCH CHAIR IN QUANTUM THEORY OF MATERIALS, NANOSTRUCTURES AND DEVICES, DEPARTMENT OF PHYSICS, UNIVERSITY OF OTTAWA, OTTAWA, CANADA ,
2. EMERGING TECHNOLOGIES DIVISION, NRC,
3.WROCLAW UNIVERSITY OF TECHNOLOGY, 4. DWAVE, 5. uTORONTO, 6.MIT, 8.uMARYLAND,
9.uCAMPINAS. 10. IZTECH

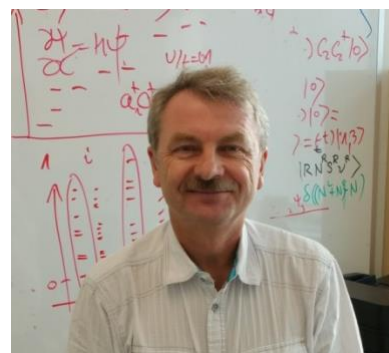
uOttawa

Pawel Hawrylak

Unmute Start Video Participants 40 Chat Share Screen Record Reactions Leave

Speaker Profile:

- **Name of the speaker** : **Dr. Pawel Hawrylak**
- **Designation** : Professor, Department of Physics.
- **Affiliation** : University of Ottawa, Canada.
- **Details of UG & PG studies:**
 - M.Sc (with Honours) - Wroclaw University of Technology, Wroclaw, Poland, 1979.
- **Details of Ph.D** :
 - PhD, Condensed Matter Theory, University of Kentucky(1984).



Area of Research:

- Theoretical Condensed Matter Physics, Low-dimensional and Nanostructured Materials, Nanophotonics, Nanoelectronics, Nanospintronics, Graphene and 2D crystals, Computational Nanoscience, Strongly Correlated Electrons, Quantum Information.

Work Experience :

- 2014-present: Professor of Physics and University Research Chair in Quantum Theory of Materials, Nanostructures and Devices, University of Ottawa, Ottawa, Canada
- 2013- visiting professor, World Premiere Institute for Advanced Materials Brain Gain program, Tohoku University, Sendai, Japan (Oct-Nov 2013).
- 2001-2014: Group Leader, Quantum Theory Group, Security and Disruptive Technologies (SDT), Emerging Technologies Division, National Research Council of Canada (NRC), Ottawa. (plan, lead, and evaluate activities of 4 permanent staff scientists , 2-4 research associates/pdfs and 2-5 students).
- 2001-2014, Principal Research Officer, Institute for Microstructural Sciences, NRC.
- 2001-2005, Quantum Information Project coordinator at IMS (plan, coordinate, and evaluate activities of ~20 experimentalists and theorists).
- 1998-2014, Adjunct Professor, University of Ottawa, Canada.
- 1998-2001, Nano-optics Project coordinator at IMS (plan, coordinate, and evaluate activities of ~12 experimentalists and theorists).
- 1994- 2001, Senior Research Officer, Institute for Microstructural Sciences.
- 1988- 1997, Adjunct Professor, in USA.
- 1987-1994, Research Officer, Institute for Microstructural Sciences, NRC.
- 1986-1987, Assistant Professor-Research, Brown University, Providence, R.I., Visiting Professor, Boston College, Newton, MA,USA.
- 1984-1986, Research Associate in Physics, Brown University, Providence, R.I.,USA.

Awards & Achievements:

- 2014 –Gold Medal with Diamonds, Senate, Wrocław University of Technology.
- 2013- Queen Elizabeth Diamond Jubilee Medal for contribution to Canadian science.
- . 2011- IMS NRC Outstanding Research Achievement Team Award for the organic photovoltaics project.
- 2010- Honorary Professor, Wrocław University of Technology, Wrocław, Poland.
- 2006- Fellow of the Royal Society of Canada: The Academies of Arts, Humanities and Science of Canada.
- 1996- Fellow of the American Physical Society for contribution to theory of optical properties of low dimensional systems.

Day-9 : 21 September 2021 Session:#11

Time : 06.30 PM TO 07.30 PM (IST)

No. Of Participants Attended : 257 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person:

Dr. David J. Singh

Professor

Department of Physics and Astronomy

University of Missouri,

Columbia, USA

The Resource Person delivered a wonderful talk on “**Understanding Thermoelectric and Their Performance**”

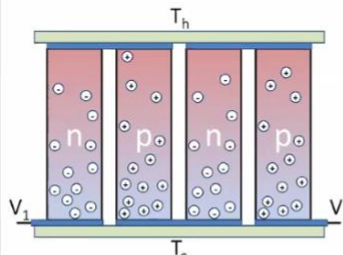
The resource person explained about the Thermoelectrics, Energy bands in semiconductors and also he explained about the thermoelectric Performance A Contraindicated Property of Matter and Ferroelectric Oxides

The participants actively interacted with the resource persons and raised many questions.



Understanding Thermoelectrics and Their Performance

David J. Singh
University of Missouri



Main Co-workers:

- Guangzong Xing
- Jifeng Sun
- Zhenzhen Feng
- Gang Chen
- Zhifeng Ren
- Lili Xi
- Jiong Yang
- Wenqing Zhang
- David Parker
- Hongliang Shi
- Yuhao Fu
- Lijun Zhang
- Xin He

$$ZT = \sigma S^2 T / \kappa$$

September 21, 2021

Speaker Profile:

- **Name of the speaker** : **Dr. David J. Singh**
- **Designation** : Professor, Department of Physics and Astronomy
- **Affiliation** : University of Missouri, Columbia, USA.
- **Details of UG & PG studies:**
 - B. Sc-Physics, University of Ottawa in Canada.
- **Details of Ph.D** :
 - Ph. D., in Physics, University of Ottawa in Canada.
 - Postdoctoral fellow in the College of William and Mary in Virginia.
- **Publications** : 662
- **Area of Research:**
 - Condensed Matter Physics
 - Ferroelectrics
 - Thermoelectrics
 - Iron-based Superconductors
 - Density Functional Theory



Work Experience :

- In 1988, Singh moved to join the theory group at the Naval Research Laboratory in Washington, DC. .
- 1988 to 2004, he continued to work on a range of materials problems, including colossal magnetoresistance, at the Naval Research Laboratory.
- 2004, Singh left Washington to join the Oak Ridge National Laboratory, a United States Department of Energy facility, in Oak Ridge, Tennessee.
- 2015, he moved to the University of Missouri.

Awards & Achievements:

- Become a fellow of the American Physical Society in 1997.
- Editorial Board member of the New Journal of Physics and Scientific Reports.
- Become a Fellow of Royal Society of Chemistry.
- Corporate fellow at Oak Ridge National Laboratory.
- Received the E.O. Hulburt Annual Science Award and the Gordon Battelle Prize.

Day-10 : 22 September 2021 Session:#12

Time : 02.00 PM TO 03.00 PM (IST)

No. Of Participants Attended : 236 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person

Dr.Dhayanantha Prabu Jaihindh

Postdoctoral Fellow,

Department of Chemical Engineering,

National Taiwan University,

Taiwan

The Resource Person delivered a wonderful talk on “**Deep Eutectic Solvents (DESS) in Functional Materials Development**”

He explained about the DES used for the synthesis of nanomaterials and elaborated the latest applications in the field of energy storage batteries and photocatalysis applications.

The participants actively interacted with the resource person and raised many questions.



Speaker Profile:

Educational Qualification

- Ph.D., Materials Science and Engineering, National Dong Hwa University On January-2019, Taiwan
- M.Tech., Nanoscience and Technology, with 7.3/10 CGPA, Anna University on May- 2010, Tamil Nadu, India
- M. Sc., Physics with 73%, Bharathiyar University on May-2007, Tamil Nadu, India
- B. Sc., Physics with 77%, Madurai Kamaraj University on April-2005, Tamil Nadu, India

Research & Work experience

- Sep-2020- Till date: Postdoctoral Researcher, Department of Chemical Engineering, National Taiwan University, Taiwan
- Feb-2019-Aug-2020: Postdoctoral Researcher, Department of Materials Science and Engineering, National Dong Hwa University, Taiwan
- Ph.D., Thesis Feb-2015-Jan-2019: Research Scholar, Department of Materials Science and Engineering, National Dong Hwa University, Taiwan.
- Sep-2012-Aug-2013: Junior Research Fellow, PSG Institute of Advanced Studies, Coimbatore, Tamil Nadu, India.
- Sep-2011-May 2012 Research Project Assistant, Department of IPC, Indian Institute of Science-Bangalore, Bangalore, India.
- M.Tech., Thesis Dec-2009- May 2010: Project work carried out at Central Electrochemical Research Institute, Karaikudi, Tamil Nadu, India.

Research Publications

- International Journals – 11, International/national Conference- 11, Invited Lectures -4
- Guest Editor
- Applied Sciences Journal by MDPI (I.F: 2.217)

Awards

- Academic excellence upon graduation awarded by National Dong Hwa University on June -2019
- National Taiwan University-Postdoctoral Fellowship

Day-10 : 22 September 2021 Session:#13

Time : 06.30 PM TO 07.30 PM (IST)

No. Of Participants Attended : 257 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person:

Dr. Prafulla Kumar Jha

Professor

Department of Physics

The Maharaja Sayajirao University of Baroda

Vadodara, Gujarat, India

The Resource Person delivered a wonderful talk on “**Fundamentals of Density Functional Theory**”

He explained about the basic concepts in density functional theory and elaborated different kinds of interactions existing in the material with their applications.

The participants actively interacted with the resource persons and raised many questions.



Zoom Meeting

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View Options

PK Jha

Sudha Lakshmanan

Beena T

Jayalakshmi Venkatachal...

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International FDP on Advanced Computational and Experimental Research in Physics-2021, 13-25, September, 2021 (22nd September, 2021)

SRMIST, Chennai

Fundamentals of Density Functional Theory

by

Prafulla K. Jha



Department of Physics, Faculty of science,

The Maharaja Sayajirao University of Baroda, Vadodara

Email: prafullaj@yahoo.com

Unmute

Start Video

Participants 100

Chat

Share Screen

Record

Reactions

Leave

9/22/2021 6:15 AM

Speaker Profile:

- **Name of the speaker** : Dr. **Prafulla K Jha**
- **Designation** : Professor,
- **Affiliation** : M.S. University of Baroda,
Vadodara, India
- **Details of UG & PG studies:**
 - M. Sc-Physics, University of Pune,
 - Ph.D. from BU, Bhopal
 - Postdoctoral fellow in Spain
- **Publications** : 280

Area of Research:

His research deals with the complexity issues and key global challenges using the wide range of disciplines such as from core metals to environmental hazardous gases for the prosperity of globe. Mainly, his research work focuses from theory (fundamentals of physics) to applications in the field of drug designing to cure cancer, bio-conjugation for the delivery of neurotransmitters, oxide supported heterogeneous catalyst for the application in fuel cell, semiconductor nanowires, superconducting, geological (with extreme environment), thermoelectric materials for energy conversion, perovskite for solar cell efficiency and nuclear materials has a direct impact to tackle developing world's greatest challenges.

Day-11 : 23 September 2021 Session:#14

Time : 02.00 PM TO 3.00 PM (IST)

No. Of Participants Attended : 230 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Resource person

Dr. K. Subramanian

Assistant Professor,

Department of Physics,

SRM Institute of Science and Technology,

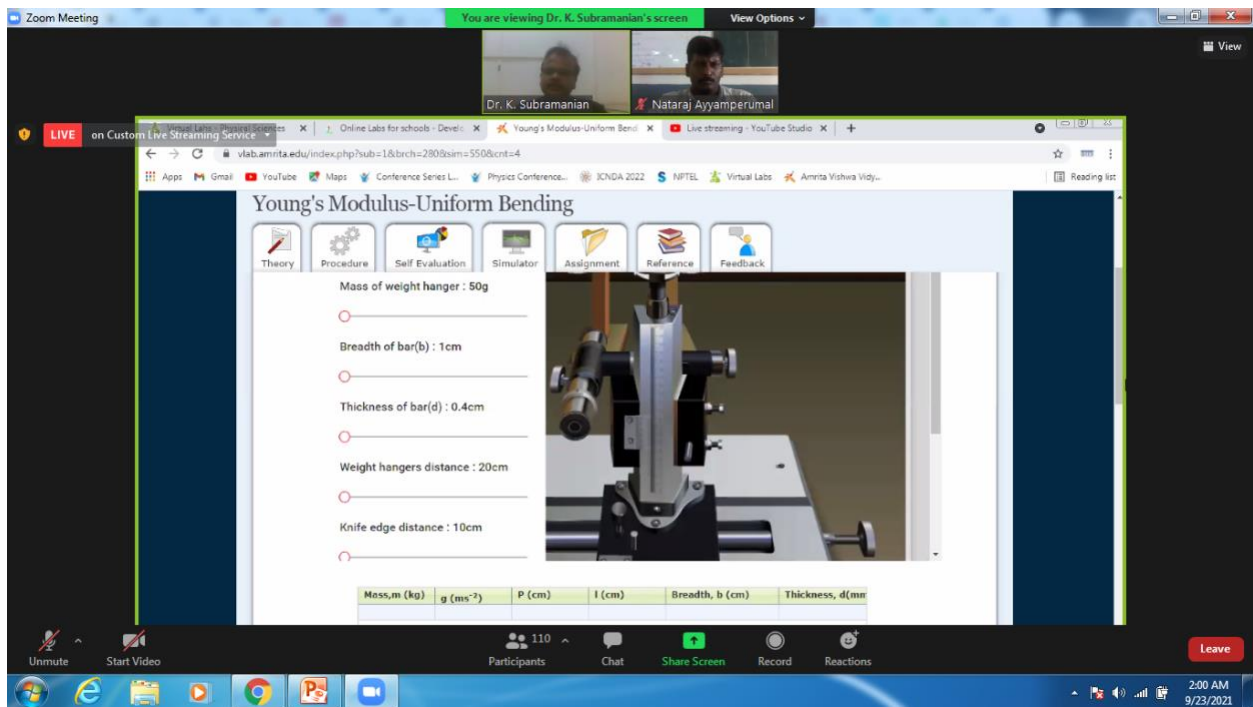
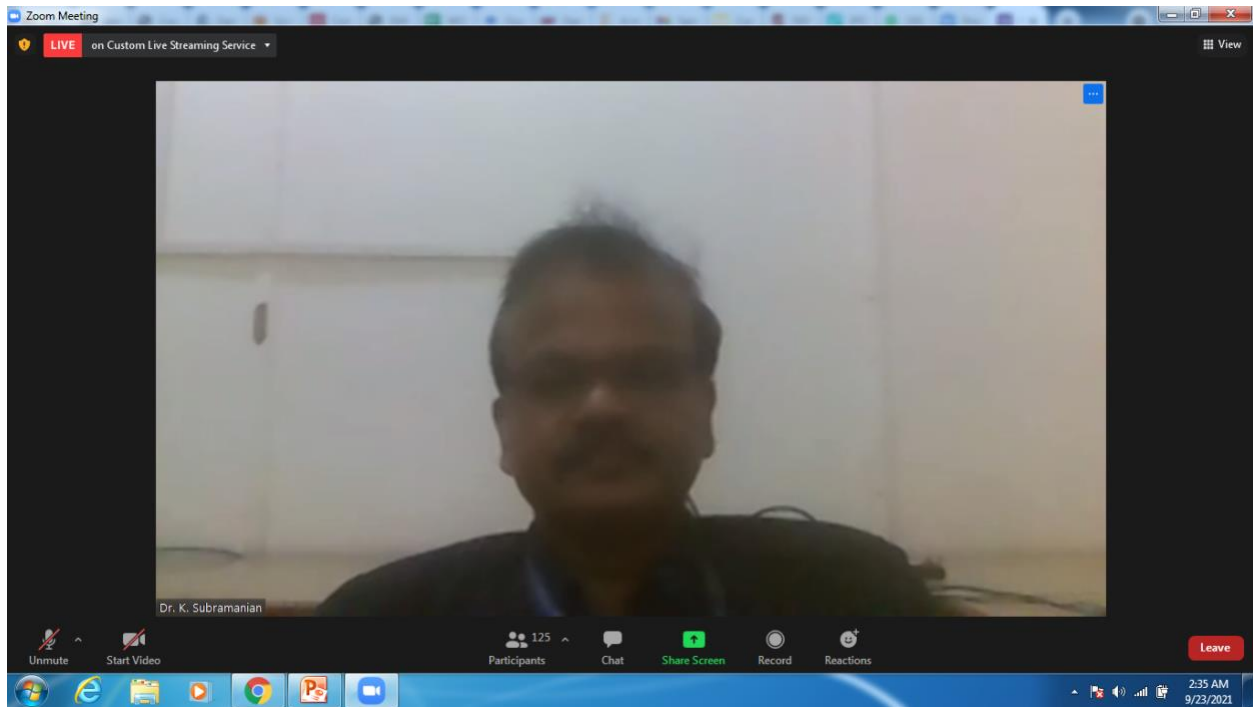
Ramapuram Campus,

Chennai, India

The Resource Person delivered a wonderful talk on “**Significance of Virtual Laboratory: An Overview**”

He explained how we can use virtual lab effectively by giving a demo lecture to the participants

The participants actively interacted with the resource person and raised many questions.



Speaker Profile:

- **Name of the speaker :** Dr. K. Subramanian
- **Designation :** Assistant Professor (Sr. G), Department of Physics
- **Affiliation :** SRM Institute of Science and Technology, Ramapuram Campus, Chennai, Tamilnadu, India.
- **Details of UG & PG studies:**
- M. Phil., Manonmaniam Sundaranar University, Tirunelveli.
- M. Sc-Physics, Madurai Kamaraj University, Madurai (1996 – 1998)
- B. Sc-Physics, Madurai Kamaraj University, Madurai (1993 – 1996)
- **Area of Research:**
- Theoretical Physics
- **Area of Research:**
- Theoretical Physics
- Nonlinear Dynamics
- Optical Fiber Communication
- Fiber for Sensing applications
- Computational Physics
- **Work Experience :**
- Worked as Assistant Professor of Physics, Department of Science and Humanities, Jerusalem College of Engineering, Pallikaranai, Chennai for 11 years.
- Lecturer of Physics, T J Institute of Technology, Karapakkam, Chennai for 3 years.
- Post Graduate Teacher of Physics, St. Savio Mat. Hr. Sec. School, Velachery, Chennai for 4 years.
- Post Graduate Teacher of Physics, Rotary Laharry Mat. Hr. Sec. School, Velachery, Chennai.
- Trained Graduate Teacher of Physics, Seventh day Adventists Mat. Hr. Sec. School, Madurai, Mapalayam, Madurai.
- **Awards & Achievements:**
- Recipient of “Best Academic Performer” award by Jerusalem College of Engineering for producing 90% in the paper Engineering Physics II (2018, 2019, 2016 & 2014).
- Recipient of “Best Academic Performer” award by Jerusalem College of Engineering for producing 85% in the paper Engineering Physics I (2016, 2015 & 2013).
- Recipient of “Best Teacher” award by Jerusalem College of Engineering for the year 2015-16.
- Recipient of “Commendable Performer” award by Jerusalem College of Engineering for producing 96% in the paper Engineering Physics II for the year 2012-13.
- Recipient of “Commendable Performer” award by Jerusalem College of Engineering for producing 94% in the paper Engineering Physics I for the year 2011-12.
- Recipient of "Best Academic Performer" award by Jerusalem College of Engineering for producing good results for class BME in the paper Engineering Physics I for the year 2010-11.
- Recipient of "Best Academic Performer" award by Jerusalem College of Engineering for producing good results for class ECE in the paper Engineering Physics I for the year 2010-11.
- Recipient of “Best Teacher” award by Lions club of Royal excellence towards the appraisal of my academic performance in St. Savio Mar. Hr. Sec. School for the year 2002 - 03.



Day-12 : 24 September 2021 Session:#15

Time : 06.00 PM TO 07.00 PM (IST)

No. Of Participants Attended : 235 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad

Resource person

Dr. K.V. Sreekanth

**Research Scientist, Institute of Materials and Engineering (IMRE) A*
Singapore**

The Resource Person delivered a wonderful talk on

“Electrically Tumble Nanophotonics enabled by chalcogenide Phase Change Materials”

He explained about functional Materials for tunable nanophotonics and also he explained about the Fano Resonant optical coatings.

The participants actively interacted with the resource persons and raised many questions.



Material properties

- Moving from GeTe towards Sb₂Te₃, crystallization speed increases and amorphous state became unstable
- Ge₂Sb₂Te₅ offers a fast crystallization speed (<20 ns)

Forward switching: Amp to Cry

- It is an annealing process: heat the PCM above the glass-transition point (T_g), but below its melting point (T_m).
- Thermally, laser and electric current induced heating

Reverse switching : Cry to Amp

- The PCM should be heated at a temperature above T_m
- A melt-quenching process
- Only possible with a shorter, higher energy optical and electrical pulsed excitation

Reversible switching is important to achieve dynamic and reconfigurable optics

11

Speaker Profile:

- **Name of the speaker** : **Dr. K. V. Sreekanth**
- **Designation** : Research Scientist
- **Affiliation** : Institute of Materials Research and

Engineering (IMRE), A*STAR,
Singapore.

- **Details of UG & PG studies:**
 - Master of Technology (M.Tech.) Photonics, **Cochin University of Science and Technology**, 2005 - 2007
- **Details of Ph.D** :
 - **Postdoc Researcher, Case Western Reserve University**, (Nov 2012 - Jul 2015).
 - **Research Fellow, Nanyang Technological University**, (May 2011 - Oct 2012).
 - Philosophy (PhD) Photonics, **Nanyang Technological University** (2008 - 2011).
- **Publications** : 79
- **Area of Research:**
 - Nanophotonics
 - Plasmonics
 - Metasurfaces
 - Biosensors



Work Experience :

- **Scientist II, Institute of Materials Research and Engineering (IMRE)**, Singapore (May 2021 - Present 5 months).
- **Senior Research Fellow, Nanyang Technological University**, Singapore (Nov 2016 - May 2021).

Day-13: 25 September 2021

Time : 12.00 PM TO 01.00 PM (IST)

No. Of Participants Attended :235 participants(Zoom and YouTube Platforms) including Faculty Members & Research Associates from India and Abroad.

Organised by :

DEPARTMENT OF PHYSICS,

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, RAMAPURAM

The event started with Welcome address by

Dr. L. Sudha,

Professor& Head

Department of Physics

Resource person:

Dr. Ervina Efzan Binti Mhd Noor

Director, Industrial Collaborations and Engagement Centre/

Associate Professor,

Faculty of Engineering and Technology,

Multimedia University,

Malaysia

The Resource Person delivered a wonderful talk on “**Solder: Recent Research and Technology**”

She explained about soldering and melting performance. She also explained about how soldering depends on contact angle and soldering area.

The participants actively interacted with the resource persons and raised many questions.

The valedictory function was started after the lecture by the resource person.

Dr. T. Beena Assistant Professor (S.G)/ Physics gave the summary of this two-week International faculty development program from day 1 to day 13.

The chief guest Dr. Ervina Efzan Binti Mhd Noor gave few words to the participants about the FDP and she appreciated organizers for the speakers from day 1 to day 12.

Following the words from chief guest few participants gave their feedback about the FDP.

Participant expressed their views and asked the organizers more such events.



Zoom Meeting | You are viewing Assoc. Prof. Ts. Dr. Ervina Ef...s screen | View Options

LIVE on Custom Live Streaming Service

Assoc. Prof. Ts. Dr. Ervina Ef... | Jayalakshmi Venkatachal... | P Manikandan | Beena T

Microstructure

Figure 10 IMC thickness vs number of reflows for both SAC and SAC with added SrTiO₃

Nanoparticles	Thickness of IMC (μm)		References
	Without addition	With addition	
TiO ₂	4.44	2.78	(Chang <i>et al.</i> , 2011)
ZrO ₂	2.8	2.0	(Gain <i>et al.</i> , 2011)
Mo	2.2	1.3	(Haseeb <i>et al.</i> , 2012)

Source: Fouzder *et al.* (2011)

Zoom Meeting toolbar: Unmute, Start Video, Participants (155), Chat, Share Screen, Record, Reactions. System clock: 12:24 AM 9/25/2021.

Speaker Profile:

- **Name of the speaker :** Dr. Ervina Efzan Binti Mhd Noor
- **Designation :** Director, Industrial Collaborations and Engagement Centre / Associate Professor,
- **Affiliation :** Faculty of Engineering and Technology, Multimedia University, Malaysia.
- **Details of UG & PG studies:**
 - M. Sc., In Materials Engineering (Advanced Materials), Universiti Sains Malaysia in 2006.
 - B. Eng. In Materials Engineering, Universiti Sains Malaysia in 2005
- **Details of Ph. D., :**
 - PhD in Materials Engineering (Advanced Materials), Universiti Sains Malaysia in 2013.
- **Publications :**
 - Published More than 40 international publications including chapter in books, book and one Malaysian Patent.
- **Area of Research:**
 - Soldering
 - Intermetallic and alloys,
 - Aluminium foam and nano-structured metal fabricated by powder metallurgy
 - Mechanical alloying
 - Nanomaterial and renewal energy.
- **Work Experience :**
 - Senior Lecturer Universiti Multimedia 2013 till present
 - R&D Engineer Toshiba Transmission & Distribution Systems Asia 2006-2007
 - Research Officer Intel Malaysia /USM 2008-2010
 - Lecturer Universiti Multimedia End 2010-2013
- **Awards & Achievements:**
 - Outstanding Professor of the Year, 2021 by World Education Leaders Summit 2021
 - Gold Award- Warsaw Invention Show (IWIS)-2020- R-Glass
 - Best Researcher Award MMU-2019
 - Gold Innovator Award and Special Award by Global Woman Inventors & Innovator Network (GWIIN), 2019, London
 - Green Award Melaka State 2018
 - GCEO Award 2017
 - TM Kristal Award 2017
 - Best Researcher Award MMU 2017
 - Special Award by World Invention Intellectual Property Associations 2015, IETE
 - Gold Medal and silver Medal , IETE 2015
 - Pertandingan Inovasi Peringkat IPTA/IPTS 2013- Champion
 - Sanggar Sanjung, (**Hall of Fame**) Award in 2006, & 2011, Universiti Sains Malaysia,

