International Conference on Thin films and Nanotechnology - Knowledge, Leadership and Commercialization (ICTN-KLC) 24th - 26th Aug 2021

All timings mentioned are in Indian Standard Time (IST)

DAY 1 - 24th Aug 2021

8:00 - 9:00 **Inauguration**
https://istem.webex.com/istem/j.php?MTID=m4603e382280aa6dcc311bec8b0e0bfa4

8:00 – 8:05	**Welcome**	Prof. Ayodhya N. Tiwari (EMPA & ETH Zurich)
8:05 – 8:10	**HoD Physics IIT Delhi Remarks**	Prof. Ratnamala Chatterjee (HoD Physics, IIT Delhi)
8:10 – 8:25	**Introduction to ICTN-KLC**	Prof. Dinesh Pandya (IIT Jammu)
8:25 – 8:35	**Director IIT Delhi Address**	Prof. V Ramgopal Rao (Director, IIT Delhi)
8:35 – 8:55	**Inaugural Speech**	Prof. Ashutosh Sharma (DST Secretary, Govt. India)
8:55 – 9:00	**Vote of Thanks**	Prof. Bodh Raj Mehta (IIT Delhi)

Session 1 **Plenary Session**
9:00 – 11:00 Session Chair **Prof. B. R. Mehta**
https://istem.webex.com/istem/j.php?MTID=m4603e382280aa6dcc311bec8b0e0bfa4

9:00 - 9:40 The thin films and Nanotechnology, application for Information Technology: The Past, Present and Future Trends, **Prof. Manijeh Razeghi (Northwestern University, USA)**
9:40 - 10:20 Bottom-up meets top-down: An Integrated Approach for Future High performance CMOS and Sensor Technologies, **Prof. V Ramgopal Rao (IIT Delhi, India)**
10:20 - 11:00 Sensor Scaling for Intelligent Heterogeneous Systems, **Prof. Navakanta Bhat (Indian Institute of Science, India)**

11:00 - 11:15 **Session Break**

Session-2A (Solar Energy Harvesting)
11:15 - 13:15 Session Chair **Prof. Viresh Dutta**
https://istem.webex.com/istem/j.php?MTID=m4603e382280aa6dcc311bec8b0e0bfa4

11:15 - 11:45 Water Splitting using particulate photocatalyst, **Prof. Kazunari Domen (University of Tokyo and Shinshu University, Japan)**
11:45 - 12:15 Compositional and interfacial engineering for high performance perovskite solar cells, **Prof. Tsutomu Miyasaka (Toin University of Yokohama, Japan)**
12:15 - 12:25 Broadband Light Harvesting via Inverted Pyramid Structured Si Surface for Efficient Solar Cell Application, **Avritti Srivastava (National Physical Laboratory, India)**
12:25 – 12:35 Conjugated Polymers as Photocatalysts for Solar Water Splitting, **Dr. R. Sebastian Sprick (University of Strathclyde, UK)**
12:35 – 12:45 Perovskite-Based Thin-Film Tandem Photovoltaics: Progress and Challenges for Commercialization, **Radha K Kothandaraman (EMPA, Switzerland)**
12:45 – 13:15 Emerging Semiconductors for solar harvesting by solution process, **Dr. Lydia Helena Wong (Nanyang Technological University, Singapore)**

13:15 – 13:30 **Session Break**

Session-2B (Optical and Bio- Applications)
11:15 - 13:15 Session Chair **Prof. G.B Reddy**
https://istem.webex.com/istem/j.php?MTID=m186d7d276296c2d86ab9f19fe9af5d9f

11:15 - 11:45 Silicon nanoporous membranes for dialysis, **Prof. Enakshi Bhattacharya (IIT Madras, India)**
11:45 - 12:15 Nanomaterials as theragnostic materials against cancer, **Prof. D. Sakthi Kumar (Toyo University, Japan)**
12:15 - 12:45 Development of ECR ion beam deposition for next-generation optical and functional thin films, **Prof. Stuart Reid (University of Strathclyde, UK)**
12:45 – 12:55 Biomedical Applications of Silver Sculptured Thin Films, **Shashank Gahlaut (IIT Delhi, India)**
12:55 – 13:05 Resistive Switching Studies in Amorphous TaxOy Thin-Films for Transparent Neuromorphic Electronics, **Darshika Sanjay Khone (BML Munjal University, India)**
13:05 – 13:15 Photoluminescent Characteristics of Hydrothermally Derived Green Glowing Down-Converted BYO:Er3+ Nanophosphors, **Dr. V B Taxak (Maharshi Dayanand University , India)**

13:15 - 13:30 **Session Break**

13:30 - 15:30

Poster Sub-session 1 (Sensors & Magnetic Materials) Session Chairs: **Dr. Veer Singh And Dr. Rajnish Sharma** https://istem.webex.com/istem/j.php?MTID=mcfb51a1b1fbf7416350eaab253e3028c

Poster Sub-session 2 (Thin Films & Nanomaterials for Space, Bio, & Optical Applications) Session Chairs: **Dr. T.D. Senguttuvan and Dr. Tarsame Singh Sian** https://istem.webex.com/istem/j.php?MTID=m5ba6a947bf44e3af4038103c6a00980b

Poster Sub-session 3 (Thin Films and Nanomaterials for Solar and Alternative Energy) Session Chairs: **Dr Achintya Dhar and Dr Rahul Kapil** https://istem.webex.com/istem/j.php?MTID=m18885578f4d855400b6454767527589a

Session-3A (Alternative Energy Harvesting / Non-Solar)
15:30 - 17:30 Session Chair **Dr. P.D. Paulson**
https://istem.webex.com/istem/j.php?MTID=m4603e382280aa6dcc311bec8b0e0bfa4

15:30 - 16:00 Thin Film Thermoelectric Devices, **Prof. Gabi Schierning (Bielefeld University, Germany)**
16:00 - 16:30 Advances in Piezoelectric MEMS for Vibration Energy Harvesting, **Prof. Ashwin A. Seshia (University of Cambridge, UK)**
16:30 - 17:00 Thermoelectric Cooling and Power Generation **Prof. Zhifeng Ren (University of Houston, USA)**
17:00 - 17:10 Fabrication of PANI/ g-C_3N_4 Nanocomposite with Enhanced TE Properties for RT Thermoelectric Applications, **V Shalini (SRM Institute of Science and Technology, India)**
17:10 - 17:20 Drastically Enhanced Seebeck Value of Novel MoS2-MoS_2/MoO_2 Lateral Heterostructure Thin Film, **Dr. R. Abinaya (Shizuoka University, Japan)**
17:20 - 17:30 Flexible PVDF-$MoSe_2$/PDMS Based Piezo-Tribo Hybrid Nanogenerator, **Vishal Singh (Delhi Technological University, India)**

17:30 - 17:45 **Session Break**

Session-3B (Sensors and Actuators)
15:30 - 17:30 Session Chair **Prof. G.L. Sharma**
https://istem.webex.com/istem/j.php?MTID=m186d7d276296c2d86ab9f19fe9af5d9f

15:30 - 16:00 Metal oxide nanostructures as chemical sensors, **Prof. Elisabetta Comini (University of Brescia, Italy)**
16:00 - 16:30 Structural progressions in Nano-Materials under the influence of varying Pressure and Temperature, **Dr. Nita Dilawar (CSIR-National Physical Laboratory, India)**
16:30 - 17:00 Product innovation in Human and Machine Health monitoring, **Prof. Dipti Gupta (IIT Bombay, India)**
17:00 - 17:10 Ultra-sensitive Charge Flip-flop Using MoS_2 Nano-Electromechanical Resonator, **Aneesh Dash (IISc, India)**
17:10 - 17:20 Engineered 2D Growth of Narrow Bandgap Cr_2S_3 for Magnetic and Thermal Sensor Applications, **Mohamad G. Moinuddin (IIT Mandi, India)**
17:20 - 17:30 A Novel Approach for Designing Quantum Dots based Electrochemical Aptasensor for Abused Prescription Stimulant Drug detection, **Shringika Soni (Amity University UP, India)**

17:30 - 17:45 **Session Break**

Session -4A (Space Applications)
17:45 – 19:35 Session Chair **Prof. Shanthi Iyer**
https://istem.webex.com/istem/j.php?MTID=m4603e382280aa6dcc311bec8b0e0bfa4

17:45 - 18:15 Nanostructured coatings & materials for aerospace applications: Current status, challenges and future prospects, **Dr. Harish Barshilia (CSIR- National Aerospace Laboratory, India)**
18:15 - 18:45 Thin Film Coatings for Space Optics, **Dr. M.V. Hanumantha Rao (LEOS-Indian Space Research Organisation, India)**
18:45 - 19:15 Thin Film Coatings for Photovoltaics and Moisute Barrier Application, **Dr. Dona Mathew (VSSC, Indian Space Research Organisation, India)**
19:15 - 19:25 Very High Absorber Multiwall Carbon Nanotubes Based Coatings, **Dr. Girish M. Gouda (LEOS-Indian Space Research Organisation, India)**
19:25 - 19:35 Development and Qualification of Silicon-dioxide Coatings on Silicon Carbide Substrate for Space Applications, **Dr. Tayaramma D.P.V. Jalluri (LEOS-ISRO, India)**

Session-4B (Magnetic Devices)
17:45 - 19:45 Session Chair **Prof. Davinder Kaur**
https://istem.webex.com/istem/j.php?MTID=m186d7d276296c2d86ab9f19fe9af5d9f

17:45 - 18:15 Spin Communication on 2D Quantum Material Devices and Integrated Circuits, **Prof. Saroj Prasad Dash (Chalmers University of Technology, Sweden)**
18:15 - 18:45 Interfacial diffusion controlled magnetisation reversal and domain state modulation in hard/soft multilayers **Prof. S. Annapoorni (Delhi University, India)**
18:45 - 19:15 Fitting Magnetic Devices into the Memory Pyramid: Opportunities and Challenges, **Dr. Sebastien Couet (IMEC, Belgium)**
19:15 - 19:25 Spin-orbit Torques in Transition Metal Dichalcogenides/Ferromagnet Thin Film Heterostructures, **Sajid Husain (CNRS, Université Paris-Saclay, France)**
19:25 - 19:35 Magnetic Properties of Ni Doped Garnet Nanoparticles, **Dr. Mukesh C Dimri (Jaypee University of Engineering and Technology, India)**
19:35 - 19:45 Enhancement of Inductance & Quality Factor Due to Formation of NiPt Microbumps in NiPt Thin Film Based On-Chip Inductors, **Shrikanth Itapu (Vellore Institute of Technology, In**

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DAY 2 - 25th Aug 2021

Session1A (Energy Storage Devices and Fuel Cells)
8:30 - 10:30 Session Chair **Dr. T. Rajagopalan**
https://istem.webex.com/istem/j.php?MTID=mc1793aed349e74b27fa408a709fd853d

8:30 - 9:00 Unveiling the Nature of Electrode/Electrolyte Interfaces in Thin Film Batteries, **Prof. Ying Shirley Meng (University of California San Diego, USA)**
9:00 - 9:30 Addressing the Dendrite Challenge in Li and Potassium Metal Batteries, **Prof. Nikhil Koratkar (Rensselaer Polytechnic Institute, USA)**
9:30 - 10:00 Nanomaterials at the Edge: Emergent Nanoparticles, **Prof. John Irvine (University of St. Andrews, UK)**
10:00 - 10:10 A 10.8 V Metal-Free Microsupercapacitor with Highly Stable Laser Irradiated Graphene Electrode for Integrated Energy Storage Device, **R S Dey (Institute of Sci. and Tech., India)**
10:10 - 10:20 One-Dimensional NiSe-Se Hollow Nanotubular Architecture as a Binder-Free Cathode for High-Performance Hybrid Supercapacitor, **Suvani Subhadarshini (IIT Kharagpur, India)**
10:20 - 10:30 2D MoS_2 Reinforced with Cu_3N Nanoflakes Prepared via Binder Less Sputtering Route For Flexible Supercapacitor Electrodes, **Gagan Kumar Sharma (IIT Roorkee, India)**

10:30 - 10:45 **Session Break**

Session-2A (Electronic and Optoelectronic Devices)
10:45 - 12:45 Session Chair **Prof. J.P.Singh**
https://istem.webex.com/istem/j.php?MTID=mc1793aed349e74b27fa408a709fd853d

10:45 - 11:15 Quantum Dots: 0D Semiconductors for Optoelectronics, **Prof. Gehan Amaratunga (University of Cambridge, UK)**
11:15 - 11:45 Hybrid Two-dimensional Semiconductor Heterostructures based Photonic Devices, **Prof. Samit K Ray (IIT Kharagpur, India)**
11:45 - 12:15 Halide Perovskite for Optoelectronics: Challenges and Remedies, **Prof. Dinesh Kabra (IIT Bombay, India)**
12:15 - 12:25 Capacitance Voltage Characteristics of AlGaN/GaN Circular High Electron Mobility Transistors, **M. Agrawal (IIT Delhi, India)**
12:25 - 12:35 A Te Doped GaAsSb Ensemble Nanowire Photodetector for Near-Infrared Application, **S Devkota (North Carolina A&T State University, USA)**
12:35 - 12:45 Electrical Bistability in Nano-composite Thin Films – Emerging 2-Terminal Electronic Memory Devices, **Dr. S. Paul (De Montfort University, Leicester, UK)**

12:45 - 13:00 **Session Break**

Session-1B (2D Materials and Applications)
8:30 - 10:30 Session Chair **Prof. Joby Joseph**
https://istem.webex.com/istem/j.php?MTID=mc73b313b3239d1efcfd7747f881ec3a3

8:30 - 9:00 A Materials Science perspective of Quantum Materials, **Prof. Venkatraman Swaminathan (Rice University, USA)**
9:00 - 9:30 Understanding 2D-3D Semiconductor Interfaces for Thermoelectrical, Photoelectrochemical and Gas Sensor Applications, **Prof. B.R. Mehta (IIT Delhi, India)**
9:30 - 10:00 Beyond Nanofluidics with 2D Materials, **Dr. Gopinadhan Kalon (IIT Gandhinagar, India)**
10:00 - 10:10 Polyaniline/Template-Free Graphitic Carbon Nitride Nanocomposite for Supercapacitor: Synthesis & Electrochemical Performance, **Arun Kumar (Jamia Millia Islamia, India)**
10:10 - 10:20 Functionalization of TiO_2 Nanotube Arrays by Size-Selective Monolayers of Ti_3C_2Tx (X = O, OH, F) Mxene to Enhance Photoelectrochemical Performance, **Nasima Khatun (IIT Madra**
10:20 - 10:30 Facile Synthesis of Magnetic Nanocomposite Using Microwave Energy for Ground Water Remediation, **Charu Lata Dube (Central University of Gujarat, India)**

Session Break

Session-2B (Computational Simulations, Modeling and AI)
10:45 - 12:45 Session Chair **Prof. Varsha Banerjee**
https://istem.webex.com/istem/j.php?MTID=mc73b313b3239d1efcfd7747f881ec3a3

10:45 - 11:15 Designing Nanomaterials for Applications: Computational Methods for Tailoring Properties **Dr. Sharat Chandra (Indira Gandhi Centre for Atomic Research, India)**
11:15 - 11:45 Characterisation of Photoelectrodes through computer simulations, **Dr. Seriani Nicola (Abdus Salam International Centre for Theoretical Physics, Italy)**
11:45 - 12:15 How ubiquitous is the charge ordered state among the nickelates? **Prof. Priya Mahadevan (S.N.Bose National Centre for Basic Sciences, India)**
12:15 - 12:25 A Simulation Study of Carrier Induced Change in Refractive Index for Optimal Light Absorption in GaAsSb Nanowires, **Kendall Dawkins (North Carolina A&T State University, USA)**
12:25 - 12:35 Theoretical Explaination of Dilution Studies on $CaMn_7O_{12}$, **Parul Jain (IIT Delhi, India)**
12:35 - 12:45 First-principles Predictions of the Electronic, Optical and Thermoelectric Properties of the New Zintl-Phase Ba_2CdAs_2, **A Khireddine (University Ferhat Abbas Setif, Algeria)**

13:00 - 15:00 **Poster Sub-session 1 (Thin Films: Growth and Characterization)** Session Chairs: **Dr. Mandar Ashtikar and Dr. Seema Agarwal** https://istem.webex.com/istem/j.php?MTID=m818b9e91c0a9e75beb4165c15b36c6c5

Poster Sub-session 2 (Electronics, Optoelectronics and Energy Storage) Session Chairs: **Dr. Somna S Mahajan and Dr. Pratishtha Pandey** https://istem.webex.com/istem/j.php?MTID=m85f13522f6d3688a3a5c1294d3a589ae

Poster Sub-session 3 (2D Materials, Emerging Quantum Devices and Computational) Session Chairs: **Dr. Kanwaljeet Singh and Dr. Mahaveer K Jain** https://istem.webex.com/istem/j.php?MTID=m489fc1c479b70dabcf41a0b42ecf7c75

Session-3 **Plenary Session**
15:00 - 17:40 Session Chair **Prof. D. K. Pandya**
https://istem.webex.com/istem/j.php?MTID=mc1793aed349e74b27fa408a709fd853d

15:00 - 15:40 Chemical Bath Deposition and Electrodeposition of chalcogenide and oxide thin films for advanced photovoltaics applications, **Prof. Daniel Lincot (IPVF, France)**
15:40 - 16:20 Power to the people democratisation driven by coated steel products, **Prof. David Worsley (University of Swansea, UK)**
16:20 - 17:00 Stress-Balancing in Piezoelectric Adjustable X-ray Optics, **Prof. Susan Trolier-McKinstry (PennState College of Earth and Mineral Sciences, USA)**
17:00 - 17:40 Microwave signal generation and neuromorphic computing using large spin Hall nano-oscillator arrays, **Prof. Johan Åkerman (University of Gothenburg, Sweden)**

17:40 - 18:00 **Session Break**

17:40 - 18:00 **Session Break**

Session-4A (Emerging Quantum Devices)
18:00 - 20:00 Session Chair **Prof P.K. Muduli**
https://istem.webex.com/istem/j.php?MTID=mc1793aed349e74b27fa408a709fd853d

18:00 - 18:30 Noise signatures in novel correlated systems, **Prof. Sambandanmurthy Ganapathy (University of Buffalo, USA)**
18:30 - 19:00 Enabling efficient and flexible two-dimensional spin current circuits, **Dr. Venkata Kamalakar (Uppsala University, Sweden)**
19:00 - 19:30 Enhanced connectivity in superconducting qubit networks using a ring resonator, **Dr. R Vijayaraghavan (Tata Institute for Fundamental Research, India)**
19:30 - 19:40 Perpendicular Magnetic Anisotropy in CoFeMnSi/$MgAl_2O_4$ based Structures for Magnetic Tunnel Junctions, **L. Saravanan (IIT Delhi, India)**
19:40 - 19:50 A Buffer $CaMnO_3$ at LAO/STO Interface, **Simran Nehra (CSIR-National Physical Laboratory, India)**
19:50 - 20:00 Surface Null Potential Mediated Nonvolatile Bistable Resistive Switching Memory Behaviour of Al Doped ZnO Thin Film, **Dr. M M Shirolkar (Symbiosis International, India)**

Session-4B (Advanced Thin Film Coating and Characterization - Equipment & Process Development)
18:00 - 20:00 Session Chair **Prof. V.D. Vankar**
https://istem.webex.com/istem/j.php?MTID=mc73b313b3239d1efcfd7747f881ec3a3

18:00 - 18:30 Electron Microscopy of Perovskite Phase Distribution on Light Emitting Edges, **Dr. Héctor Alfredo Calderón Benavides (The Instituto Politécnico Nacional, Mexico)**
18:30 - 19:00 Operando observation of reversible oxygen migration and phase transitions in ferroelectric $Hf_{0.5}Zr_{0.5}O_2$ thin films, **Dr. Pavan Nukala (Indian Institute of Science, India)**
19:00 - 19:30 Material architectures for energy technologies & bio-medical sensing **Prof. Silke Christiansen (IKTS, Germany)**
19:30 - 19:40 Thin Film Deposition by Cathodic Vacuum Arc Technique: A Review, **Prof. O S Panwar (BML Munjal University, India)**
19:40 - 19:50 Atomic Layer Deposition Technique and its Role in Silicon Solar Cell Technology Transformation, **Dr. Vandana (CSIR-AMPR, Bhopal, India)**
19:50 - 20:00 Effect of Substrate Type and Au Catalyst Layer in Controlling the Dopant Concentration and Morphology in Ba Doped SnO_2 Films Grown Through CVD, **Shalu Sharma (JIIT, India)**

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DAY 3 - 26th Aug 2021

Ethics, Leadership & Commercialisation sessions

Session 1	**Plenary Session**
9:00 - 11:00	Session Chair **Dr. Balvinder Gogia**
	https://istem.webex.com/istem/j.php?MTID=m3a9cde2a9ab0cfbbc8ec2fd422fb712c
9:00 – 9:40	Academia to Entrepreneurship- Why not? **Prof. Thirumalai Venkatesan (University of Oklahoma, USA)**
9:40 – 10:20	Leadership, Entrepreneurship and Research Ethics, **Mr. K. Ananth Krishnan (Tata Consultancy Services, India)**
10:20 – 11:00	Ethical behaviour in Science **Prof. Rohini M Godbole (Indian Institute of Science, India)**
11:00 - 11:15	**Session Break**
Session-2	**Leadership & Commercialisation sessions**
11:15 - 13:45	Session Chair **Prof. A.N. Tiwari**
	https://istem.webex.com/istem/j.php?MTID=m3a9cde2a9ab0cfbbc8ec2fd422fb712c
11:15 - 11:45	Entrepreneurship in Manufacturing Thin Film Products & Applications, **Mr. Pawan Bhat (Protoflex Corporation, USA)**
11:45 - 12:15	Semiconductor Nanostructures for Optoelectronics Applications, **Prof. Chennupati Jagadish (Australian National University, Australia)**
12:15 - 12:45	From lab scale to large volume thin film production equipment: callenges of upscaling technology, **Dr. Milind Acharya (Milman Thin Film Systems Pvt. Ltd, India)**
12:45 - 13:00	**Session Break**
Session-3	**Leadership & Commercialisation sessions**
13:00 - 14:30	Session Chair **Prof. Vikram Kumar**
	https://istem.webex.com/istem/j.php?MTID=m3a9cde2a9ab0cfbbc8ec2fd422fb712c
13:00 - 13:30	Fascinating Thin Film Phenomena: from Research to Technology Entrepreneurship and Innovation…, **Dr. P. Babu Dayal (Photonic Components DFM Ltd, Hong Kong)**
13:30 - 14:00	Ethics for leading Lab research to production, **Dr. Seema Vinayak (Solid State Physics Laboratory, DRDO, India)**
14:00 - 14:30	Challenges and Opportunities in Industry-Academia Interactions for Technology Development in India, **Dr. Satyendra Kumar (SauryaEnerTech, India)**
14:30 - 15:00	**Session Break**
Session-4	**Concluding Session**
15:00 - 16:25	Session Chair **Dr. T. Rajagopala**n
	https://istem.webex.com/istem/j.php?MTID=m3a9cde2a9ab0cfbbc8ec2fd422fb712c
15:00 - 15:15	Valedictory
15:15 - 15:30	Group Photographs
15:30 - 16:00	Feedback
16:00 - 16:15	Poster Awards Session
16:15 - 16:30	Vote of Thanks