



International Winter School on
Frontiers in Materials Science

December 04-06, 2023

Venue: Conference Hall

and



International Conference on
Recent Advances in Materials

December 07-09, 2023

Venue: Auditorium



JNCASR

Jawaharlal Nehru Centre for Advanced Scientific Research
Jakkur, Bengaluru 560064

ORGANIZING INSTITUTIONS



School of Advanced Materials (SAMat)



Sheikh Saqr Laboratory

Ras Al Khaimah Centre for
Advanced Materials, UAE
@ International Centre for Materials Science



International Centre for Materials Science

Jawaharlal Nehru Centre for
Advanced Scientific Research
Jakkur, Bengaluru 560 064
<http://www.jncasr.ac.in/icms>



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International Winter School on
Frontiers in Materials Science

P R O G R A M

December 04-06, 2023

Conference Hall
JNCASR, Jakkur, Bengaluru 560064

Monday, December 04, 2023

08:30 - 09:30	Registration
09:30 - 09:45	Inaugural Session
SESSION 1	Chair: N S Vidhyadhiraja
09:45 - 10:25	A K Cheetham, UC Santa Barbara and NUS, Singapore <i>Recent Developments in Perovskite Halides</i>
10:25 - 11:05	T Pradeep, IIT Madras <i>Atomically Precise Metal Clusters</i>
11:05 - 11:30	Tea / Coffee + Photo
SESSION 2	Chair: S Balasubramanian
11:30 - 12:10	Ranjani Viswanatha, JNCASR <i>Quantum Dots: Revolutionizing the World of Materials</i>
12:10 - 12:50	M L Klein, Temple University <i>Understanding Water Using Computer Simulation</i>
12:50 - 14:00	Lunch
14:00 - 15:00	Poster Session I + Tea / Coffee
SESSION 3	Chair: Rajesh Ganapathy
15:00 - 15:40	N Ravishankar, IISc <i>Insights from Atomic Scale Investigations of Nanostructures using STEM</i>
15:40 - 16:20	Clare Grey, University of Cambridge <i>Towards a Net Zero World: Developing and Applying New Tools to Understand How Batteries Function and Fail</i>
16:20 - 17:00	G Sankar, University College London <i>Metal Ions Promoted Enhanced Oxygen Vacancy Creation in Ceria</i>
17:00 - 17:40	Stefan Blügel, Peter Grünberg Institute and Institute for Advanced Simulation <i>Nanoscale Skyrmions in Magnets</i>

Tuesday, December 05, 2023

SESSION 4 Chair: Sebastian C Peter

09:00 - 09:40

S Sampath, IISc
Electrochemical Interfaces

09:40 - 10:20

Premkumar Senguttuvan, JNCASR
Enabling Zinc Metal Anodes for Aqueous Batteries

10:20 - 11:00

Helmer Fjellvåg, University of Oslo
*In Situ and Operando Studies of Energy Materials
Using Synchrotron Radiation Based Methods*

11:00 - 11:30

Tea / Coffee

SESSION 5 Chair: Bivas Saha

11:30 - 12:10

Arunava Gupta, University of Alabama
Ferroelectric Thin Film Materials and Their Applications

12:10 - 12:50

M B Sreedhara, IISc
*2D Materials and 1D Inorganic Nanotubes at the Crossroads
of Solid State Chemistry and Nanotechnology*

12:50 - 13:45

Lunch

13:45 - 15:00

Poster Session II + Tea / Coffee

SESSION 6 Chair: Pratap Vishnoi

15:00 - 15:40

Tapas K Maji, JNCASR
*Developing Photocatalyst by Post-Synthetic Modification
of Metal-Organic Frameworks*

15:40 - 16:20

Angshuman Nag, IISER Pune
Molecular Design of 2D Hybrid Perovskite Semiconductor

16:20 - 17:00

Veerabhadrarao Kaliginedi, IISc
Charge Transport at the Electrode|Molecule Interface

17:00 - 17:40

G V Pavan Kumar, IISER Pune
Optothermal Tweezers: Dielectrics and Plasmonics

Wednesday, December 06, 2023

SESSION 7 Chair: K S Narayan

09:00 - 09:40

J Paul Attfield, *University of Edinburgh*
Powder Neutron Diffraction Studies of Inorganic Materials

09:40 - 10:20

Prashant V Kamat, *University of Notre Dame*
Overcoming Challenges in Photocatalysis and Electrocatalysis

10:20 - 10:50

Tea / Coffee + Photo

10:50 - 11:50

Sheikh Saqr Materials Lecture
Ram Seshadri, *UC Santa Barbara*
Seeking New Low- κ Dielectrics and Topological Superconductors

11:50 - 13:00

Poster Session III + High Tea

13:00 - 14:00

Lunch

SESSION 8 Chair: T Govindaraju

14:00 - 14:40

Timothy S Fisher, *UC Los Angeles*
Using Data Science in Material Synthesis to Accelerate Process Optimization (and Your Time to Degree!)

14:40 - 15:20

Tharamani Nagaiah, *IIT Ropar*
Advanced Energy Materials for Energy Conversion Device

15:20 - 16:00

S Natarajan, *IISc*
New Materials: Is There a Role for Mineral Structures

16:00 - 16:30

Tea / Coffee

SESSION 9 Chair: Subir K Das

16:30 - 17:10

Ranjan Singh, *Nanyang Technological University*
On-Chip THz Silicon Topological Photonics for 6G to XG Wireless

Time	Monday December 04, 2023	Time	Tuesday December 05, 2023	Time	Wednesday December 06, 2023
08:30-09:30	Registration	09:00-09:40	S Sampath	09:00-09:40	J Paul Attfield
09:30-09:45	Inaugural Session	09:40-10:20	Premkumar Senguttuvan	09:40-10:20	Prashant V Kamat
09:45-10:25	A K Cheetham	10:20-11:00	Helmer Fjellvåg	10:20-10:50	Tea/Coffee + Photo
10:25-11:05	T Pradeep	11:00-11:30	Tea/Coffee Break	10:50-11:50	Ram Seshadri <i>(Sheikh Saqr Materials Lecture)</i>
11:05-11:30	Photo Session + Tea/Coffee Break	11:30-12:10	Arunava Gupta	11:50-13:00	Poster Session III + High Tea
11:30-12:10	Ranjani Viswanatha	12:10-12:50	M B Sreedhara	13:00-14:00	Lunch Break
12:10-12:50	M L Klein	12:50-13:45	Lunch Break	14:00-14:40	Timothy S Fisher
12:50-14:00	Lunch Break	13:45-15:00	Poster Session II + Tea/Coffee Break	14:40-15:20	Tharamani Nagaiah
14:00-15:00	Poster Session I + Tea/Coffee Break	15:00-15:40	Tapas K Maji	15:20-16:00	S Natarajan
15:00-15:40	N Ravishankar	15:40-16:20	Angshuman Nag	16:00-16:30	Tea/Coffee Break
15:40-16:20	Clare Grey	16:20-17:00	Veerabhadrarao Kaliginedi	16:30-17:10	Ranjan Singh
16:20-17:00	G Sankar	17:00-17:40	G V Pavan Kumar		
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