



**International Winter School – 2021 on
Frontiers in Materials Science – A Hybrid Event**
December 06-10, 2021
Venue: Nevill Mott Hall

Monday, December 06, 2021

09:20am - 09:30am **Inaugural Session**

Session 1

Chair: G U Kulkarni

09:30am - 10:30am **Sir A K Cheetham**
Recent Developments in Hybrid Perovskite Halides

Session 2

Chair: Tapas K Maji

10:30am - 11:30am **Susumu Kitagawa**
*Past, Present and Future of Porous Coordination Polymers (PCPs) /
Metal-Organic frameworks (MOFs)*

11:30am - 12:00noon Break

12:00noon-01:00pm **S Sampath**
Interfaces in Electrochemistry

01:00pm - 02:00pm Break

Session 3

Chair: A Sundaresan

02:00pm - 03:00pm **R S Swathi**
*A Journey towards the Heaven of Chemical Fidelity of
Intermolecular Force Fields*

03:00pm - 04:00pm **J Paul Attfield**
New Materials from High Pressure

04:00pm - 04:30pm Break

04:30pm - 05:30pm **Aron Walsh**
*Beyond Silicon: Accelerated Discovery of Sustainable Solar Energy
Materials*

05:30pm - 07:30pm **POSTER SESSION**

Tuesday, December 07, 2021

Session 4

Chair: **Ranjan Datta**

09:30am - 10:30am

Kristin Persson

The Era of Data-Driven Materials Innovation and Design

10:30am - 11:30am

D D Sarma

In search of Quantum Spin Liquids

11:30am - 12:00noon

Break

12:00noon-01:00pm

S Balasubramanian

Theory Meets Experiments on Gas Adsorption in Porous Materials: Thermodynamics, Dynamics, Kinetics and Beyond

01:00pm - 02:00pm

Break

Session 5

Chair: **Bani K Sarma**

02:00pm - 03:00pm

Tanusri Saha-Dasgupta

Computer Predictions on Hybrid Organic-Inorganic Perovskites

Session 6

Chair: **M Eswaramoorthy**

03:00pm - 04:00pm

Sheikh Saqr Materials Lecture

Judith Driscoll

Challenges and Successes in Translating The Huge Promise of Functional Oxides Into Useful Energy Devices

04:00pm - 04:30pm

Break

04:30pm - 06:30pm

POSTER SESSION

Wednesday, December 08, 2021

Session 7

Chair: **Sridhar Rajaram**

- 09:30am - 10:30am **Raphael Clement**
Solid-state NMR insights into functional materials
- 10:30am - 11:30am **Arindam Ghosh**
Correlation effects and thermoelectricity in twisted bilayer graphene
- 11:30am - 12:00noon Break
- 12:00noon–01:00pm **R Murugavel**
Enriching single-ion magnetism: Importance of symmetry
- 01:00pm - 02:00pm Break

Session 8

Chair: **Kanishka Biswas**

- 02:00pm - 03:00pm **Ranjani Viswanatha**
The story of manganese in quantum dots
- 03:00pm - 04:00pm **Matt Rosseinsky**
Design and Discovery of Functional Materials – Synthesis, Structure, Computation and Machine Learning
- 04:00pm - 04:30pm Break

Session 9

Chair: **Premkumar S**

- 04:30pm - 05:30pm **Clare Grey**
Next generation batteries: new operando methods and new processes
- 05:30pm - 06:30pm **R Vaidhyanathan**
Exploring COFs for Lightweight and Fast Charging Storage

Session 10

Chair: **Bivas Saha**

- 07:30pm – 08:30pm **Mircea Dinca**
Surprising Properties of 2D Metal-Organic Frameworks

Thursday, December 09, 2021

Session 11

Chair: **K S Narayan**

09:30am - 10:30am	Timothy S Fisher <i>Zero-carbon energy and nano materials at scale: Solar-thermal synthesis of graphitic carbon and hydrogen via methane decomposition</i>
10:30am - 11:30am	Rajesh Ganapathy <i>Colloidal Epitaxy</i>
11:30am - 12:00noon	Break
12:00noon-01:00pm	U Ramamurty <i>Statistics and activation parameters of the elastic-plastic transition in crystals</i>
01:00pm - 02:00pm	Break

Session 12

Chair: **N S Vidhyadhiraja**

02:00pm - 03:00pm	Bettina Lotsch <i>Real structure effects and light storage in molecular frameworks</i>
03:00pm - 04:00pm	Andrew Goodwin <i>Diffuse scattering and its analysis</i>

Session 13

Chair: **J Paul Attfield**

08:00pm - 10:30pm **Felicitations of Prof. A K Cheetham**

Friday, December 10, 2021

Session 14

Chair: **Srikanth Sastry**

09:30am - 10:30am	Ram Seshadri <i>Refractory Metal Oxide Electrodes for Lithium-Ion Batteries</i>
10:30am - 11:30am	T Govindaraju <i>CDP Architectonics: Upcycling Cyclic Dipeptide</i>
11:30am - 12:00noon	Break
12:00noon-01:00pm	Shobhana Narasimhan <i>Being a Little Bad: Defects in 2D Materials</i>
01:00pm - 02:00pm	Break

Session 15

Chair: **Sarit S Agasti**

02:00pm – 03:00pm	K George Thomas <i>Playing with Excitons in Semiconductor Quantum Dots</i>
03:00pm – 04:00pm	Russell Morris <i>Developing Biological Applications of MOFs</i>
04:00pm - 04:30pm	Break

Session 16

Chair: **Subir K Das**

04:30pm – 05:30pm	Richard Catlow <i>Catalysis For Sustainable Chemicals and Fuels</i>
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05:30pm **Concluding Session**

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Program

<u>Time (IST)</u>	Monday December 6, 2021	Tuesday December 7, 2021	Wednesday December 8, 2021	Thursday December 9, 2021	Friday December 10, 2021
09:20-09:30	Inaugural Session				
09:30-10:30	A K Cheetham	Kristin Persson	Raphael Clement	Tim Fisher	Ram Seshadri
10:30-11:30	Susumu Kitagawa	D D Sarma	Arindam Ghosh	Rajesh Ganapathy	T Govindaraju
12:00-13:00	S Sampath	S Balasubramanian	R Murugavel	U Ramamurty	Shobhana Narasimhan
14:00-15:00	R S Swathi	Tanusri Saha-Dasgupta	Ranjani Viswanatha	Bettina Lotsch	K George Thomas
15:00-16:00	J Paul Attfield	<i>Sheikh Saqr Materials Lecture: Judith Driscoll</i>	Matt Rosseinsky	Andrew Goodwin	Russell Morris
16:30-17:30	Aron Walsh	Posters (16:30 – 18:30)	Clare Grey	Felicitation of Prof. A K Cheetham 08:00 – 10:30PM (IST) 06:30 – 09:00AM (PST) 02:30 – 05:00PM (UK)	Richard Catlow
17:30-18:30	Posters (17:30 – 19:30)		R Vaidhyanathan		Concluding Session (17:30)
19:30-20:30			Mircea Dinca		