

ICMAT 2023

SATELLITE WORKSHOP

INTERNATIONAL WORKSHOP ON FRONTIERS OF MATERIALS SCIENCE AND ENGINEERING



EVENT SCHEDULE

0845 - 0920

Registration + Breakfast Reception

0920 - 0930

Opening & Welcome Ceremony

0930 - 1030

Talk by **Prof. Jenny NELSON**, *Imperial College London, United Kingdom*, on "**Molecular Electronic Materials for Energy Conversion and Storage**"

1030 - 1130

Talk by **Prof. Leo KOUWENHOVEN**, *Delft University of Technology, The Netherlands*, on "**Design and Materials Considerations for Quantum Computing Devices**"

1130 - 1145

Closing Ceremony

1145 - 1315


Lunch Break


1315 - 1430

Lab Tour



For more information, visit <https://www.icmat2023.mrs.org.sg>

 30 JUNE 2023
9 AM TO 1430 PM (SGT)

 Innovis, Multipurpose Hall 1 & 2
2 Fusionopolis Way, Singapore 138634

REGISTRATION FOR FMSE WORKSHOP 2023

ON-SITE

Date & Time: 28 June 2023 (Wed; 1:30 PM to 5:30 PM) to
29 June 2023 (Thu; 10:30 AM to 5:30 PM)

Venue : Outside Symposium R2, Suntec City

Fee : SGD 75 (ICMAT delegates; w/GST)
SGD 100 (Non-ICMAT delegates; w/GST)

ONLINE



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ICMAT 2023

SATELLITE WORKSHOP

INTERNATIONAL WORKSHOP ON FRONTIERS OF MATERIALS SCIENCE AND ENGINEERING



This half-day workshop, co-organised by ICMAT 2023 and IMRE, aims to address the frontier topics in materials science and engineering. Our invited speakers will also share their insightful experiences on career development in STEM.



Prof. Dr. Jenny NELSON

Professor of Physics in the Blackett Laboratory and Head of the Climate change mitigation team at the Grantham Institute - Climate Change and Environment at Imperial College London. She was awarded the 2009 Institute of Physics Joule Prize and the 2012 Royal Society Armourers and Brasiers Company Prize for her research. In 2016, she won the Institute of Physics Faraday Medal and Prize. Her current research focuses on understanding the properties of molecular semiconductor materials and their application to organic solar cells.



Molecular Electronic Materials for Energy Conversion and Storage

Molecular electronic materials, such as conjugated polymers and molecules, are attractive candidates for applications in solar energy conversion. Designing the ideal materials requires understanding of the relationships between chemical structure, molecular packing, processing and ultimate device function. We will discuss how molecular photovoltaic materials and devices have evolved to now reach almost 20% efficiency, and how they may develop in future. We also consider their application to energy storage.

PROF. DR. LEO P. KOUWENHOVEN

Former Partner Manager and Principal Researcher at Microsoft, former founding-director at QuTech, member of the Kavli Institute for NanoScience in Delft and Distinguished University Professor at Delft University of Technology. PhD from Delft University of Technology (1992), postdoc research at UC-Berkeley, visiting professor at Harvard, and since 2014 foreign member of the US National Academy of Science. Research focus evolved from mesoscopic physics in semiconductor nanostructures to quantum device physics for qubits and quantum computation.



Design and Materials Considerations for Quantum Computing Devices

The demands on a high qubit fidelity for scalable quantum computation translate into design and materials considerations. We focus on solid state qubits and discuss scalable quantum computation requirements. We compare existing qubit approaches with ultimate dream solutions. We focus on superconducting qubits, spin qubits and topologically protected qubits.