

BEM Approved CPD/PDP Hours: 4 Ref: IEM23/PG/362/T



# Half-Day Seminar

ach Talk

2 Sept 2023 (Sat)



8.30am – 12.30pm

IEM Secretariat Office E-Gate, Penang



REGISTER ONLINE @ event.iempenang.org

IEM Member : FOC Non-IEM Member: RM 60



Speaker 1: Dr Mauro Pravettoni



Moderator: Ir Tan Bak Ping

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## **Synopsis**

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#### Topic 1: New Reliability Challenges for Solar Deployment in Urban Environment

otovolta

By Dr Mauro Pravettoni

The recent evidence of the need for a further boost in solar photovoltaic (PV) deployment has triggered actions from policymakers also in South-East Asia. These are leading to a change of paradigm in the PV community, from established PV applications (mainly: rooftop, and utility-scale for commercial PV modules; but also, space for high-efficiency cells; and to a certain extent indoor and gadgets) towards the exploitation of new "integrated" applications. In 2022 our Institute has co-launched the 1st International Integrated-PV Workshop, bringing together worldwide experts in the following areas: building-integrated PV (BIPV), vehicle-integrated PV (VIPV), agro-PV, floating-PV, and PV integrated into urban infrastructures (e.g., noise-barrier PV, PV fence, road-integrated PV, PV shields, PV-carports, etc.). Modules designed for these novel PV applications require to rethink the test procedures for their qualification and new advanced stress tests will be needed to ensure that modules can withstand these specific operational environments. In this talk, Dr Pravettoni will address the stresses to be assessed soon, to ensure PV module reliability in the new paradigm of PV deployment.

### **About the Speaker**

Dr Mauro Pravettoni is Director of PV Modules for Urban Solar at the Solar Energy Research Institute of Singapore (SERIS), National University of Singapore (NUS). He got his PhD at the Imperial College London. He is co-convenor of Singapore's National Committee for Solar Energy Products and Accessories. He is member of the International Electrotechnical Commission (IEC) TC82, of the British Society for the Philosophy of Science and Technical Assessor for NATA, the Australian National Agency of Testing Authorities. From 2007 to 2010 he worked at ESTI, the European centre of reference for solar testing. From 2010 to 2016 he did his research on solar metrology in Switzerland. Since 2017 he works at NUS, where he leads SERIS' ISO 17025 accredited Laboratory for Characterization & Reliability of solar modules. Since 2018 he is member of the International Scientific Committee at SNEC, Shanghai. He wrote 90+ works, as peer-reviewed papers, books, and conference proceedings. In 2008 he co-developed the world record efficiency luminescent solar concentrator.





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#### Program

Time	Details
8.30am-9.00am	Registration
9.00am-10.30am	topic 1
10.30am-11.00am	Tea Break
11.00am-12.00pm	topic 2
12.30pm	Q& A

# **Topic 2**: Development of aesthetical solar PV modules for building applications – "Peranakan PV"

By Dr Saw Min Hsian

The Institution of Engineers, Malaysia (Penang Branch)

In high density urban context such as Singapore and Penang island, building integrated solar photovoltaics (BIPV) has immense potential in transforming buildings from energy consumer to clean energy provider. The adoption of modern and innovative technological solutions such as BIPV is not limited only to modern structures; it could also be implemented to heritage buildings to value-add these living artefacts by shifting its paradigm from purely physical conservation to making them functionally relevant for the age through constant redevelopment and repurposing. One important feature of integrating PV modules into heritage buildings is respecting the aesthetics of these conserved buildings while harnessing as much solar energy as possible to meet the energy demand.

In this talk, Dr Saw will present new design concepts of colourful PV modules for BIPV, addressing both functional and aesthetic aspects. Highlighting the connection with the local environment and traditions, the proposed design concepts are demonstrated on colourful PV modules with patterns that are inspired by the Peranakan culture uniquely to Singapore and Malaysia, coined as "Peranakan PV". This unique BIPV solution combines both tradition and innovation in a reliable and beautiful PV product that is well suited for integration into the façades of modern as well as heritage buildings, by preserving or adding aesthetical value to the buildings.



Speaker 2: Dr Saw Min Hsian



Moderator: Ir Teh Siew Yin

#### **About the Speaker**

**Dr Saw Min Hsian** graduated with a PhD in Mechanical Engineering at the National University of Singapore in 2023, with a thesis on the design, development and characterization of coloured PV modules for building applications (building-integrated photovoltaics (BIPV)). She received the B.Eng degree in Mechatronics and Microsystems from Heilbronn University, Germany, in 2013; and the M.Eng degree in Mechanical Engineering (Renewable Energy) from Beuth University of Applied Sciences Berlin, Germany, in 2015.

Currently, she is a Research Fellow at PV Modules for Urban Solar Cluster of the Solar Energy Research Institute of Singapore (SERIS), a research institute of the National University of Singapore (NUS). Her research focuses on the development of novel PV module technologies, as well as advanced characterization and testing methodologies for novel integrated PV applications with relevant applications for the urban environment such as BIPV. She has authored 10+ peer-reviewed papers and conference papers.