

Wednesday Afternoon, May 14, 2025

Keynote Lectures

Room Town & Country A - Session KYL-WeKYL

Keynote Lecture II

Moderator: Dr. Peter Kelly, Manchester Metropolitan University, UK

1:00pm KYL-WeKYL-1 **Spatial Atomic Layer Deposition for High Throughput Industrial Production of Lithium-Ion Batteries and Photovoltaic Cells**, *Tommi Kääriäinen [tommi.kaariainen@beneq.com]*, Beneq, USA **INVITED**

Atomic Layer Deposition (ALD) is an enabling thin film technology which found its use in energy applications such as energy storage (Li-ion batteries) and PV applications (TOPCon and perovskite PVs). Thin oxide coating deposited by ALD has been shown to improve battery performance through the introduction of thin film coatings to modify interface surfaces on cathodes, anodes and separators. ALD can help to improve thermal stability, stabilize Solid Electrolyte Interphase (SEI), suppress dendrite growth, inhibit transition metal dissolution, and increase interfacial contact between layers, all of which are current issues facing lithium-ion battery technology. ALD SnO₂ has been a material of choice for electron transport layers (ETL) of perovskite based solar cells and Al₂O₃ as a passivation layer for TOPCon solar cells.

Spatial ALD (SALD) is an advanced coating technique, which has been studied for more than 10 years for various applications. We will demonstrate how SALD technology can be used to scale-up the throughput of ALD technology used in battery and PV applications.

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