

Enhance Battery Performance with Superior Materials

9 October 2024

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Battery research and development is among the fastest-growing industries worldwide.

The safety, performance, and lifespan of a battery are directly influenced by the quality of its materials.

This workshop provides the skills needed to characterise electrodes, separators, slurries, electrolytes, and cells to ensure peak performance, safety, and longevity.

Master the Science of Optimal Battery Performance

- ▶ **In-depth Characterisation Techniques:** Learn to measure and evaluate crucial physical properties of battery components.
- ▶ **Hands-on Training:** Gain practical experience with various characterisation techniques, including particle size, pore size, rheology, density, and surface analysis.
- ▶ **Expert-led Sessions:** Benefit from insights by Anton Paar's experts in Material Characterisation, focusing on new methods for electrode adhesion and mechanical property

Key Takeaways

- ▶ **Maximise Battery Performance and Lifespan:** Understand the role of Surface Area, Particle size & Porosity in characterizing battery material performance.
- ▶ **Achieve Ideal Slurry Properties:** Learn how to produce and maintain high-quality, consistent slurries, using rheological characterisation of flow behavior.
- ▶ **Guarantee Electrolyte Quality:** Discover methods to ensure the safety and quality of your battery electrolytes.
- ▶ **Mechanically Test Finished Electrodes:** Gain the skills needed to perform mechanical testing on final products.
- ▶ **Unlock the Power of X-ray Diffraction:** Utilise X-ray diffraction for battery powder and cell characterisation.

This workshop is perfect for professionals involved in battery research, development or production

Places will be limited to ensure a good ratio of delegates to tutors during the workshop. To reserve your place, please complete the following form and email to: info.gb@anton-paar.com

Workshop Programme 9 October 2024

09:30	Welcome, Registration & Coffee on arrival
09:45 – 10:15	Session 1 – Characterising your anode materials: Best Method with Dr Nishil Malde - Surface area & pore size distribution
10:15 – 10:45	Session 2 – The Importance of Particle Size to Battery Performance with Cormac Carry-Fennessy
10:45 – 11:30	Practical in the Lab
11:30 – 11:45	Short Break
11:45 – 12:15	Session 3 - Characterising your finished electrodes: Best Methods with Dr Nishil Malde Covering: - Hardness & Elastic Modulus of Electrodes - Adhesion of Functional Layers on Electrodes
12:15 – 13:00	Practical in the Lab
13:00 – 13:30	Lunch Break & Networking
13:30 – 14:00	Session 4 – How to speed up your material prep and track material changes with Dr Steve Singh - Including practical Raman Spectroscopy demo in the lab
14:00 – 15:00	Session 5 – Battery Quality Control – Including practical in the lab with Steve Vincent - Viscosity & density measurement of battery electrolytes
15:00 – 15:15	Short break
15:15 – 16:00	Session 6 – Complete rheological characterization of battery materials with Joseph Hodges - Flow and deformation behavior of powders, slurries, pastes and films
16:00 – 16:45	Practical session in the lab
16:45 – 17:00	Finish and safe travels

Meet the team



Dr Nishil Malde is our UK Product Manager for X-Ray, Surface Area & Porosity and Mechanical Surface Characterisation. Nishil has over 25 years of experience in technical instrument sales and application support, including 11 years at Anton Paar. With a PhD in Physics from Imperial College London, Nishil is a recognised expert in materials characterisation. His passion lies in guiding our customers to innovative solutions for their material analysis needs.



Cormac is an accomplished Application Engineer with over two years of experience at Anton Paar. He has spent the majority of that time developing customer solutions using a range of techniques, including laser diffraction, DLS, rheology and gas adsorption. He has a solid academic foundation from Leicester University, in engineering and applied sciences, which helps him to apply these techniques to the problem of solving application challenges. Cormac is quickly developing a strong understanding of advanced analytical techniques and their applications in battery technology.



Steve Singh – Product Manager for ASC
Steve Singh has worked in the field of analytical and synthetic chemistry for over 30 years. He joined Anton Paar in 2004 as the Product Manager for the Chemical Analysis Technology division, now called Analytical and Synthetic Chemistry (ASC). Along with ASC, Steve is also responsible for FTIR and Raman spectroscopy.



Steve Vincent is our UK Sales manager for Anton Paar measurement products including our range of viscometers. A chemist by training, he has worked for more than 30 years with market leading companies in the analytical instrument and software business. He has expertise in density measurement, refractometry, electrochemistry, molecular spectroscopy. He is also our in-house expert for the pharma industry, and the data-integrity solutions we offer to address the regulatory requirements the industry faces.



Joseph Hodges is the Product Manager for Rheology & Particle Characterisation for UK & Ireland. Joseph has a degree in Biomedical Sciences from the University of Southampton and has 7 years' experience assisting research & manufacturing institutions, adopting physical characterisation methods on rheometers and developing their material characterisation strategies throughout the UK, US, Europe and South East Asia. In his current role he is responsible for supporting application development and technical enquiries within the UK & Ireland.



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