



## NEWSLETTER ISSUE 2

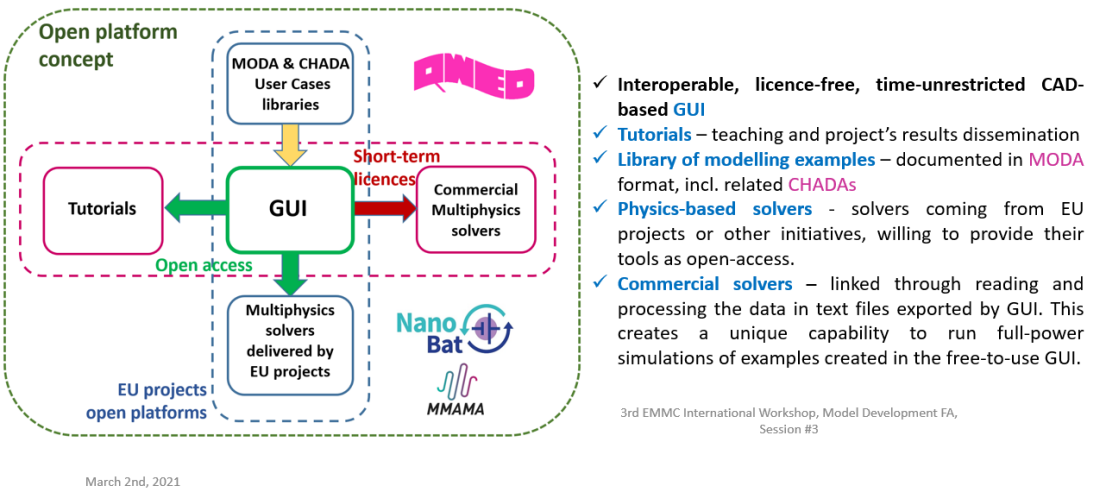
### Welcome...

.... to the 2nd issue of our NanoBat newsletter. Besides meeting Dr Nawfal Al-Zubaidi R-Smith, who is not only an excellent researcher as you will see below, but also a core member of our management team, you will find out more about our most recent activities, including a report on our participation in the EMMC workshop or the launch of our cooperation with the OITB TEESMAT. Enjoy reading!

### NanoBat at 3rd International EMMC workshop

Three NanoBat partners (QWED, Keysight and JKU) took part in Session 3 of the Model Development Focus Area at the 3rd International Workshop of the EMMC on March 2-4, 2021. The specific objectives of Session 3 were to encourage new efforts of the EMMC community towards the modelling of energy materials. Outcomes from all EMMC Focus Areas are currently being processed to provide input to future research agendas, and in particular the EMMC Roadmap.

### Open Platform concept



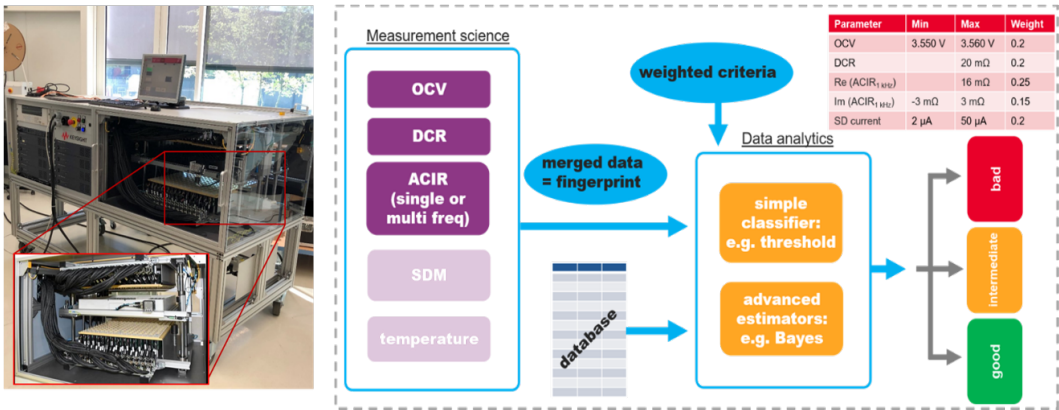
March 2nd, 2021

[Read more about NanoBat's contribution to EMMC!](#)

### Keysight Measure Station for incoming cell quality inspection and data analytics

Keysight implemented a multiplexed Measure Station (MS) with 256-channels for LIB cell quality inspection (left). The Measure Station can characterize OCV, DCIR, ACIR and self-discharge for a tray of 16x16 cells. It can be applied for both battery manufacturing end-of-line as well as for incoming cell inspection. The sketch on the right shows how the proposed OCV, ACIR measurements are used to classify cells into different categories, including good, intermediate, and bad cells. The general methodology for cell classification is to measure the fingerprint of the cell from the OCV and ACIR, and save the results into a database and apply data analytics such as comparison to threshold values or more advanced statistical based learning methods. Currently, advanced data analytics and modelling efforts are ongoing within the NanoBat project, by using inline data from the measure station to classify cells and estimate SoC and SoH of cells.

Cell quality inspection hardware (left) & data analytics (right)



## Meet the people behind NanoBat - Dr Nawfal Al-Zubaidi R-Smith

Dr Nawfal Al-Zubaidi R-Smith is a researcher in NanoBat and a Post-Doc at Johannes Kepler University Linz, with research focused in Batteries, Electronic Tests and Measurements, Impedance Spectroscopy (EIS), as well as Finite Element Modelling (FEM). He has several peer-reviewed publications in the field of electrical engineering and mathematics in scientific journals including IEEE and JCSC. Earlier he received his PhD in electrical engineering and radio electronics from Brno University of Technology, Czech Republic (2018), and a MSc in electrical engineering with emphasis on radio communication from Blekinge Institute of Technology (BTH) in Sweden (2013). During the PhD he received research publication awards, including IEEE best paper award in 2017.



Visit Nawfal Al-Zubaidi's academia account and find his publications there.

### Collaboration with TEESMAT OITB

We are happy to announce that we started to actively participate in TEESMAT – the Open Innovation Test Bed for Electrochemical Energy Storage Materials. NanoBat will provide 4 technology offers to the unique pool of characterisation techniques which are able to probe the behaviour of all components of a battery.

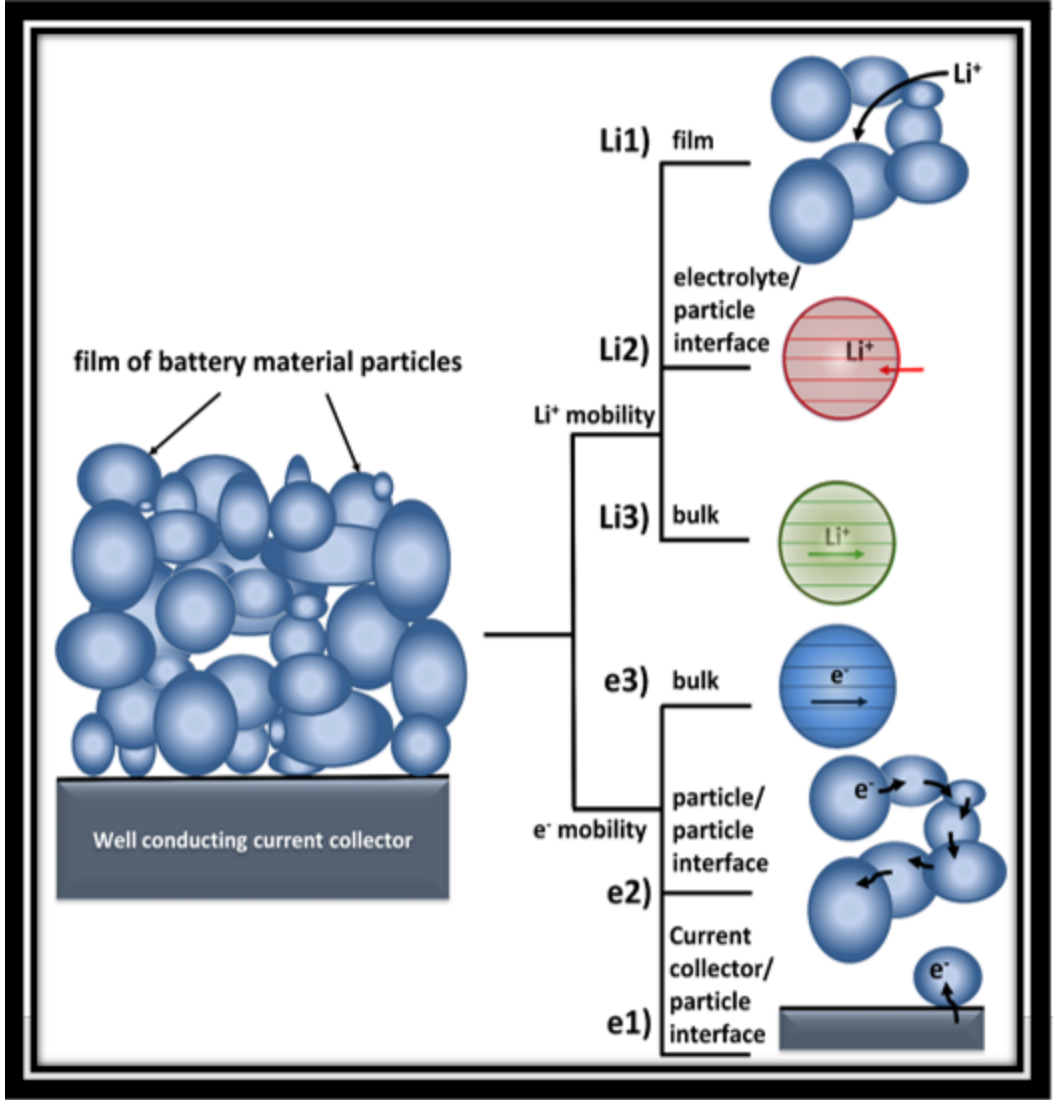
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Find out more about our collaboration!

### Publication: Why nanoelectrochemistry is necessary in battery research?

The active materials constitute the heart of any battery so that unambiguous determination of their intrinsic properties is of essential importance to achieve progress in battery research. In his review article, Edgar Ventosa from NanoBat partner University of Burgos highlights the critical role of nanoelectrochemistry in battery research to help encourage its use in this field.



[Read the full article here!](#)

### Upcoming Events

#### 2nd NanoBat workshop "New Trends in Materials and Electrochemical Characterisation for Li-ion Batteries (LIB)"

Throughout the project duration, NanoBat is organising workshops open to the scientific community.

The 2nd NanoBat workshop entitled “New Trends in Materials and Electrochemical Characterisation for Li-ion Batteries (LIB)” will take place virtually on **April 29, 2021**.

The first part comprises three lectures by experts in the field while the second part focuses on early stage researchers (ESRs) who present their work in three different breakout rooms via short videos.

[Registration is still open!](#)

We hope that you enjoyed the 2nd issue of our newsletter and look forward to continuing our journey with you.

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