

Evaluation Summary

Energy Storage in Batteries

Materials, Systems, and Manufacturing

SCCER Summer School | 11-15 July 2016 | Möschberg | Switzerland



Evaluation Approach

During the summer school, we distributed a multiple-choice evaluation questionnaire and asked the 34 participants to give us a feedback on each lecture. We wanted to know how much, on a scale from 5 (absolutely) to 1 (not at all), the lectures satisfied the participants' expectations in regard to a number of criteria. We asked them for their general impression of the lecture, the relevance of the topic,

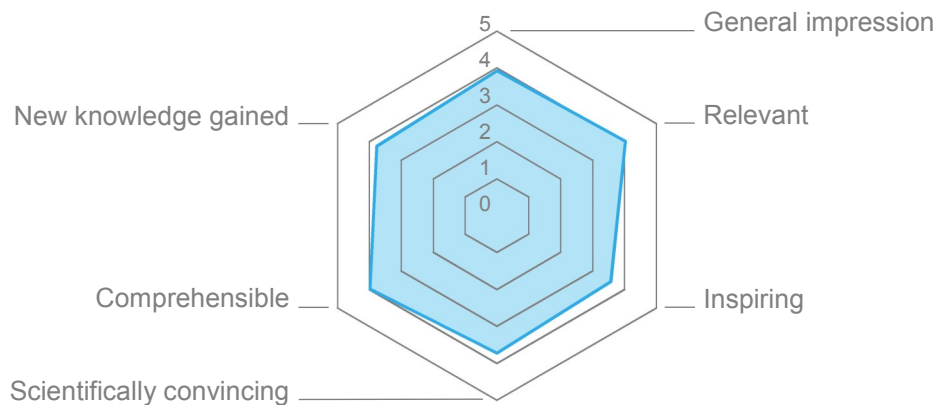
whether the talk was inspiring, scientifically convincing, and comprehensible, and if they gained new knowledge. In addition, participants could comment on their ratings. We received 28 filled out questionnaires but some participants rated only a selection of lectures. A summary of the results is presented below, completed by the qualitative feedback given by the participants.

«Great! Perhaps something other than traditional lectures to break things up a bit!»

Quality of Lectures

The overall [feedback on the course contents was generally good](#). The average rating for the lectures was 3.8 out of 5 points with minor differences between the individual criteria (see hexagon below). The best rated speaker received 4.3, the lowest rated 3.3 points. While the [relevance](#) and the [comprehensibility](#) of the talks was generally considered good, participants often felt that the [talks could have been more inspiring](#).

In qualitative terms, some participants thought that the topics were either a bit redundant or they would have appreciated [more emphasis on fundamental concepts](#) relevant for their own PhD research and [less technology oriented input](#). Others missed more methodological input with [practical exercises](#), for instance on battery characterization, or [alternative learning methods](#) such as in-depth discussions in smaller groups or lab or industry visits. Finally, a few participants were a little disappointed by the narrow focus on lithium-ion technology only.



The Summer School

Energy storage devices are key components in current energy systems and will be even more important in the near future, in particular for electric mobility and renewable energy storage. Both stand for a climate-friendly energy future and rely to a great extent on the availability of durable, inexpensive, and safe electricity storage systems.

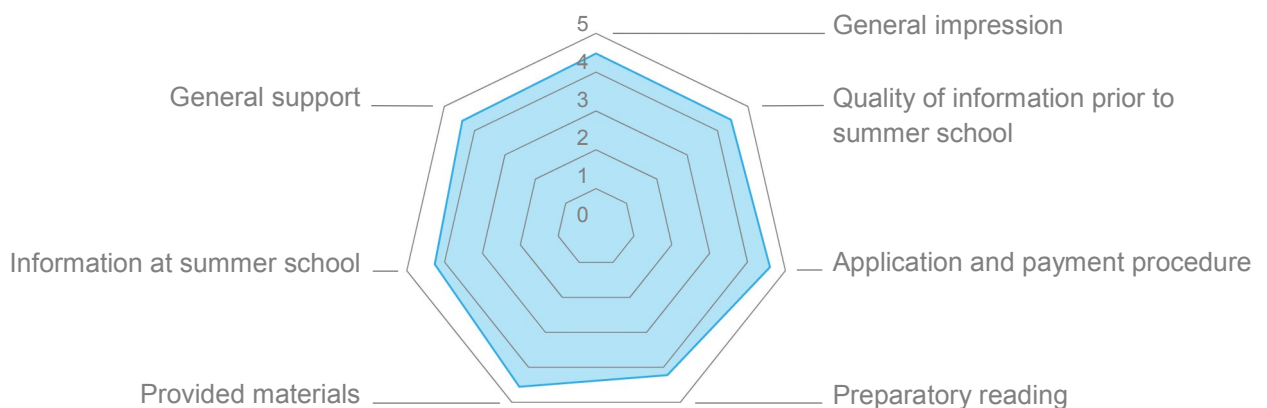
With 16 speakers from academia and industry, the summer school offered a profound overview of battery research, from basic electrochemistry and material science to the management of battery systems and key application issues in the automotive and the electricity industry. For the detailed course contents, see the list on the next page.

«Very good food and friendly staff but bad WIFI connection.»

Organization and Venue

With an average of 4.5 out of 5 points, the rating for the overall organization was very good. However, some participants criticized that the focus on lithium-ion technology could have been better communicated early on and many missed a social fringe event, such as an external dinner or a joint trip. Participants' rating of the venue, 4.1 out of

5 points, was also quite positive. But while the food and the surroundings were very much appreciated – with the usual exceptions – a number of participants thought that the lecture room was too small or the location too difficult to reach. The weak WIFI connection was also repeatedly criticized.



Course Contents

Prof. Dr. Petr Novák

Basics of Battery Electrochemistry

Prof. Dr. Maksym Kovalenko

Basics of Materials Science

Dr. Claire Villevieille

Characterization of Cell Components

Dr. Donat Adams

Ageing and Safety of Cell

Prof. Dr. Wolfgang Bessler

Physicochemical Modeling and Simulation

Florian Ringbeck

Battery Management System: Functions & Algorithms

Dr. Gerhard Rizzo

Thermal Modeling and Management

Prof. Dr. Axel Fuerst | Dr. Pascal Häring

Lithium Battery Design and Production

Dr. Olaf Böse

Modeling Characterization and Tests on Battery Packs

Prof. Dr. Andrea Vezzini

Battery System Components

Dr. Timothy Patey

BESS Technology for Public Transportation and Green Power Grid

Marcel Held

Reliability and Safety

Marcel Gauch

Life Cycle Assessment and Environmental Aspects

Christian Köbel

Application Key Issues I (Transportation Industry)

Dr. Daniel Brand

Application Key Issues II (Utility Company)

