

TOWARDS SUSTAINABLE HIGH-ENERGY RECHARGEABLE BATTERIES

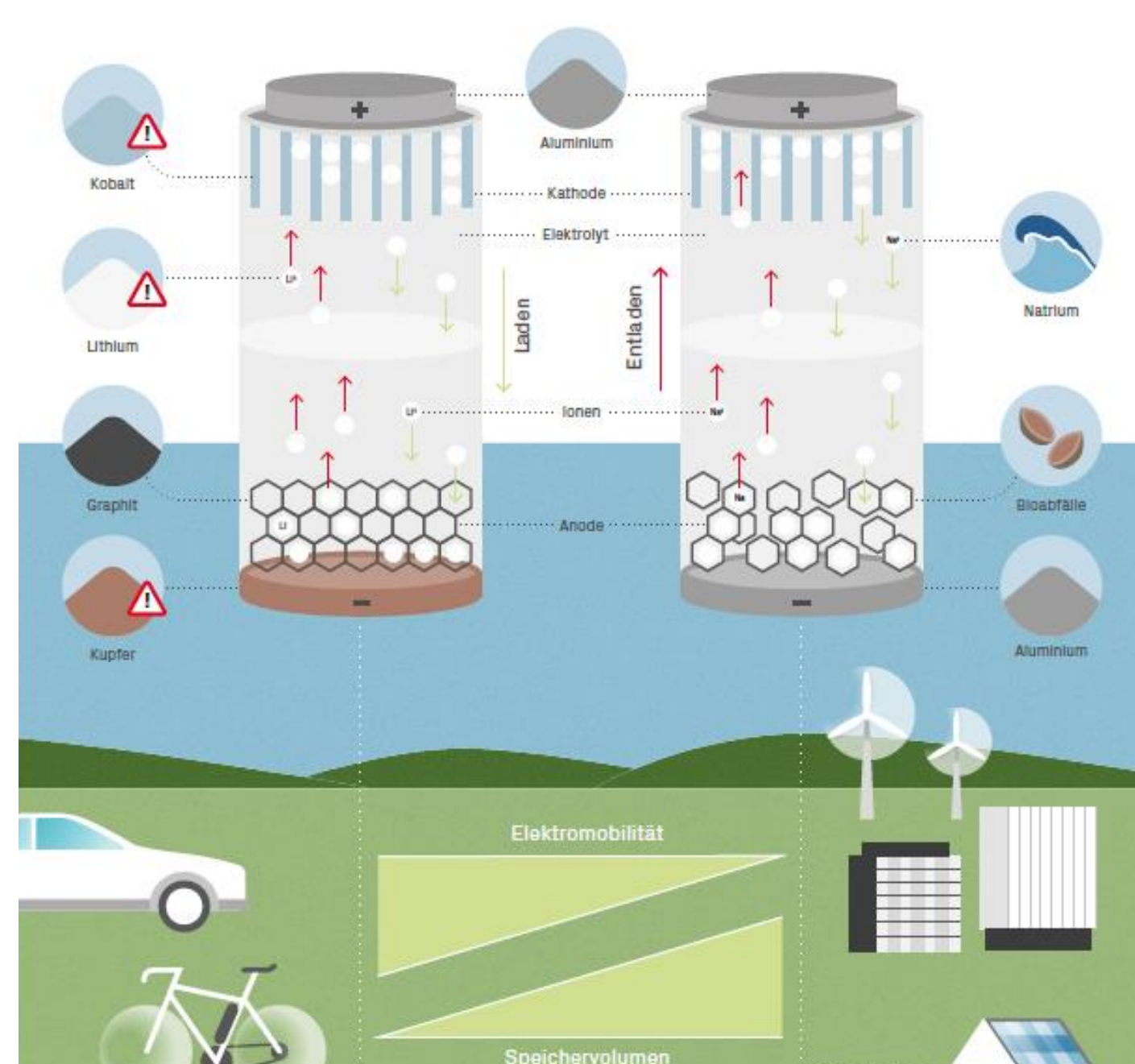
SWISS COMPETENCE CENTER FOR ENERGY RESEARCH

HEAT & ELECTRICITY STORAGE



MOTIVATION

Enabling more sustainable and robust energy storage in support of the implementation of Swiss Energy Strategy 2050. The integration of the fluctuating renewable energy sources requires easily available energy storage solutions with high efficiency. Batteries represent the most efficient energy storage as compared to other technologies.



ADVANCED BATTERY AND BATTERY MATERIALS - WP2

WP Leader, PSI:

PSI PI:

ETHZ/Empa PI:

Uni Fribourg PI:

Empa PI:

BFH PI:

P. Novák

S. Trabesinger

M. Kovalenko

K. Fromm

C. Battaglia

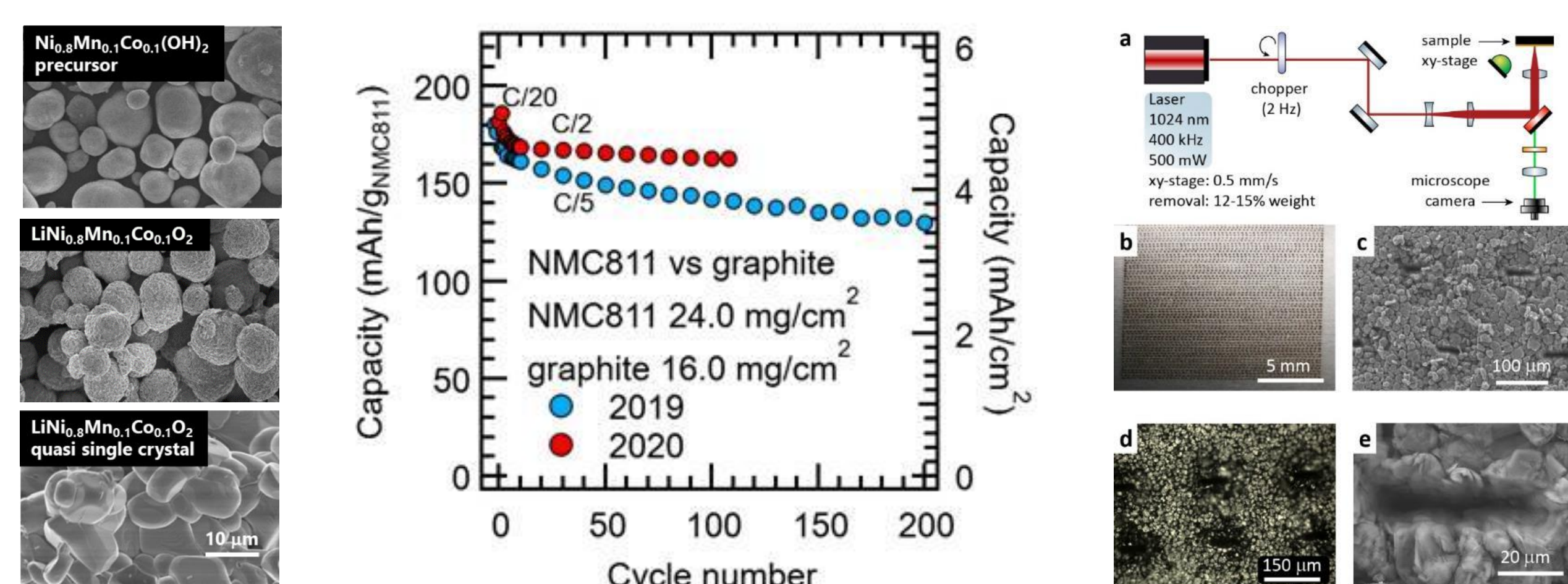
A. Fuerst

GOALS

- The development of materials with low-cobalt for next generations of advanced batteries, ideally Co-free materials
- Understanding and improving current and next-generation battery materials
- Improving battery performance in terms of energy density, lifetime and safety

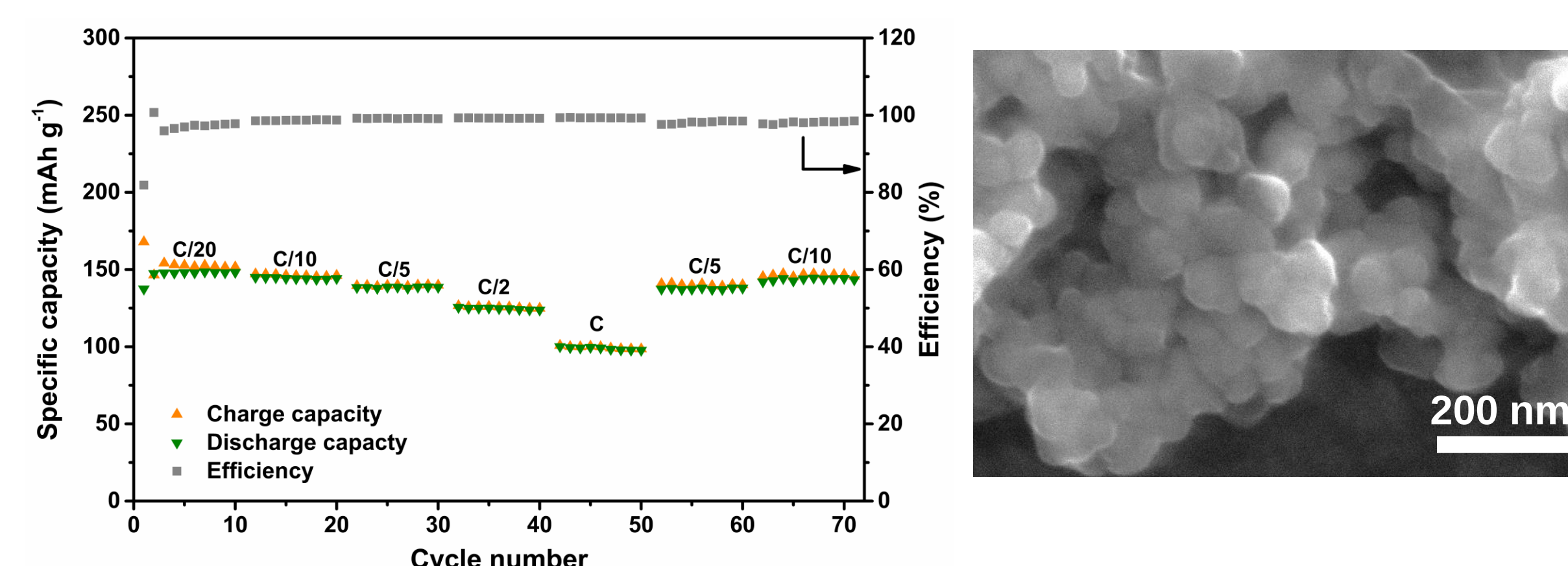
ACHIEVEMENTS

Material and electrode – Empa & ETHZ



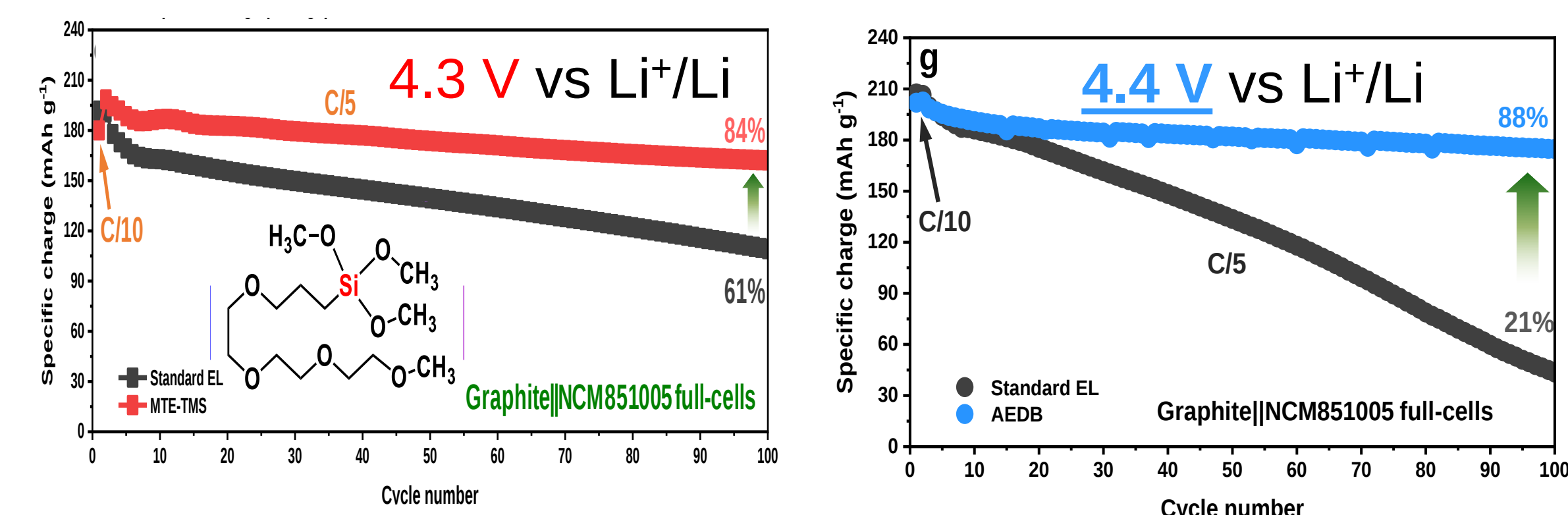
- Improved low-Co materials
- Thick cathodes and anodes for high energy density
- Patterned graphite electrodes for high power

New Co-free materials – PSI & UNIFR



- Co-free cathode materials with improved rate capability

Electrolyte Additives – PSI, UNIFR & Empa



- Stabilizes performance of the low-Co cathodes at high potentials
- Improves energy density

Demonstrator – all partners



- 230 Wh/kg are expected, when scaled up to a pouch cell with a stack of 10 double-side-coated anode/cathode pairs
- 284 Wh/kg are expected in an ideal case



More information: <http://www.sccer-hae.ch/storagehandbook.php>

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