

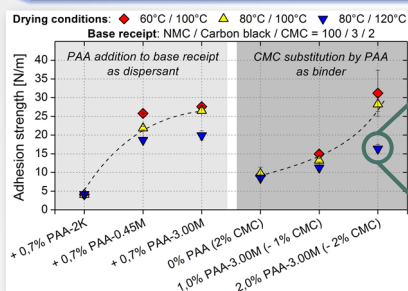
# Aqueous processing of NMC: Challenges, properties and the role of inactive materials

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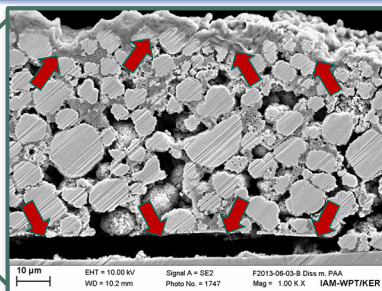
## Lab scale manufacturing of electrodes and cells



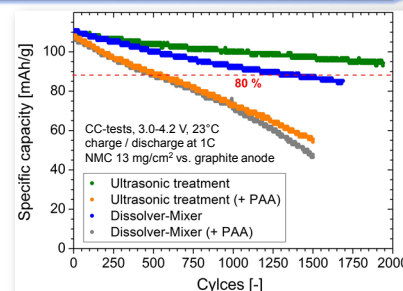
## Impact of binder and dispersants on electrode properties and cell performance



Electrode adhesion in dependency on drying conditions and PAA binder

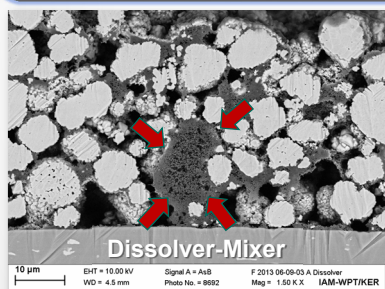


Binder migration as a result of high drying rates causing adhesion loss

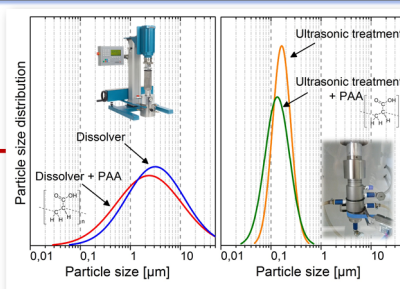


Lower cell reliability due to reduced electrode adhesion

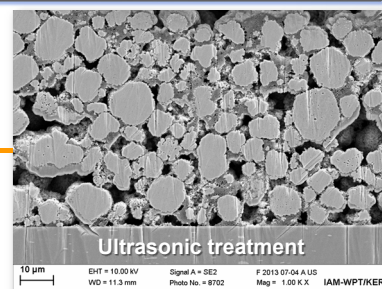
## Impact of slurry processing on electrode properties



Carbon black agglomerate residue

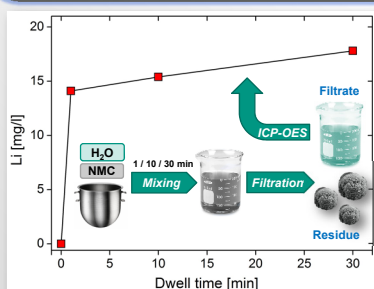


Dispersing quality of carbon black depending on the process technology

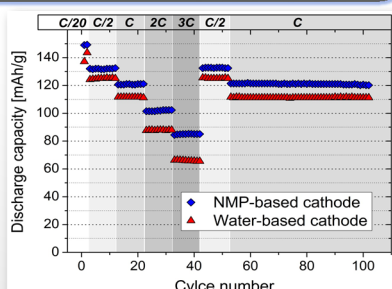


Improved carbon black distribution

## Interaction of NMC with water



ICP-OES analysis revealing that Li-leaching occurs very promptly



Discharge capacity loss as a result of NMC hydrolysis

## Outlook

- Investigation of binder distribution and migration
- Effect of dispersants and alternative binder systems on processing and cell properties

## References

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- F.A. Çetinel, W. Bauer, 6th Int. Symposium Advanced Battery Power, 24-26 March 2014, Münster
- M. Müller et al., 5th Int. Conf. Carbon for Energy Storage/Conversion, 23-26 September, Mülheim a.d. Ruhr
- F.A. Çetinel et al., 2nd Int. Conference on Materials for Energy (EnMat), 12-16 May 2013, Karlsruhe
- F.A. Çetinel et al., 5th Int. Conference on Shaping of Advanced Ceramics, 29-31 January 2013, Mons