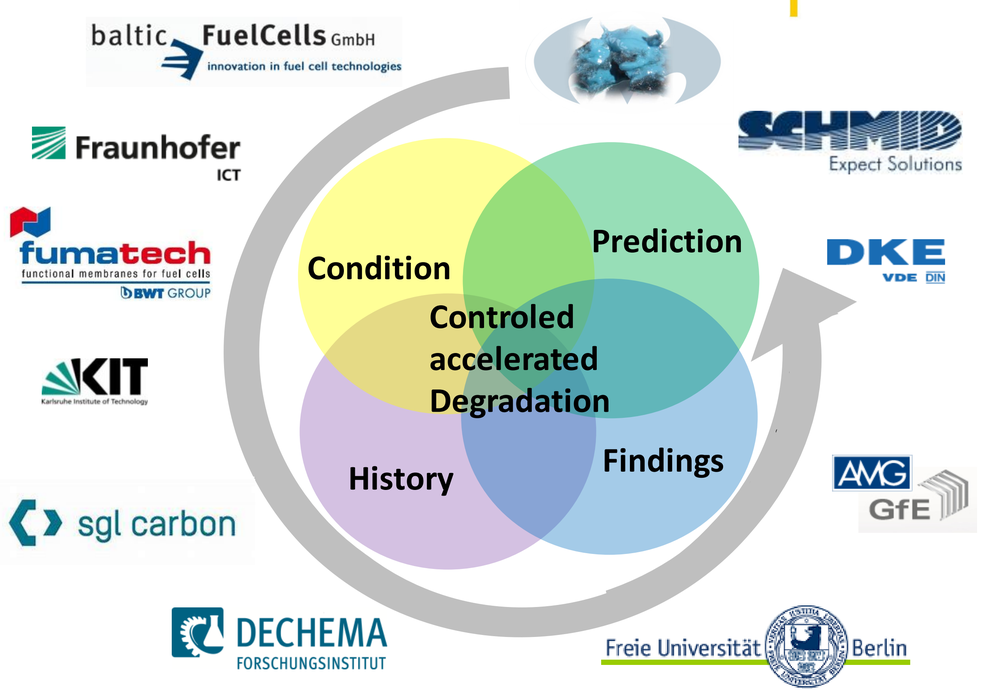
# State of Charge (SOC) monitoring for crossover identification at Vanadium Flow Batteries (VFB)

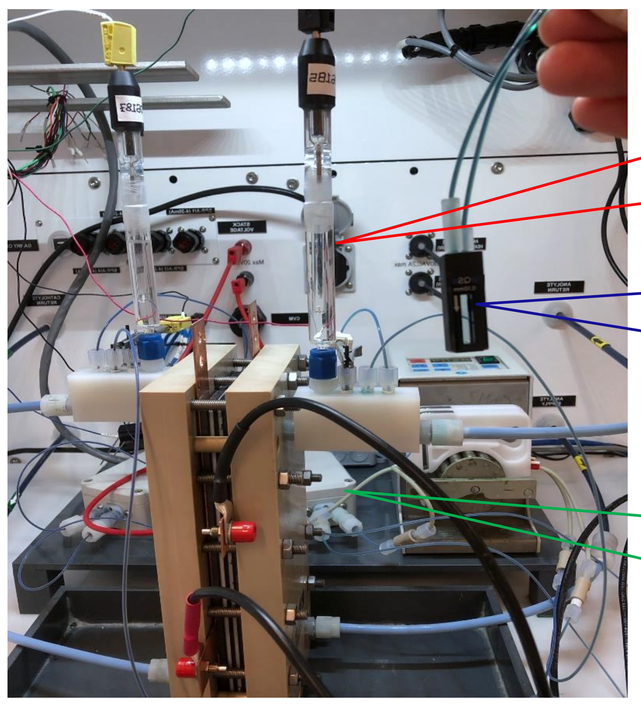
C. Weidlich, T. Haisch, N. Bogolowski| e-mail: claudia.weidlich@dechema.de

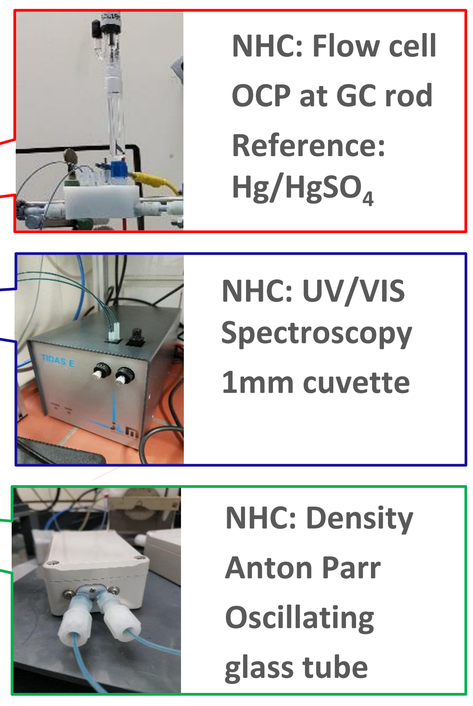
## Joint project „DegraBat“

Federal Ministry for Economic Affairs and Energy



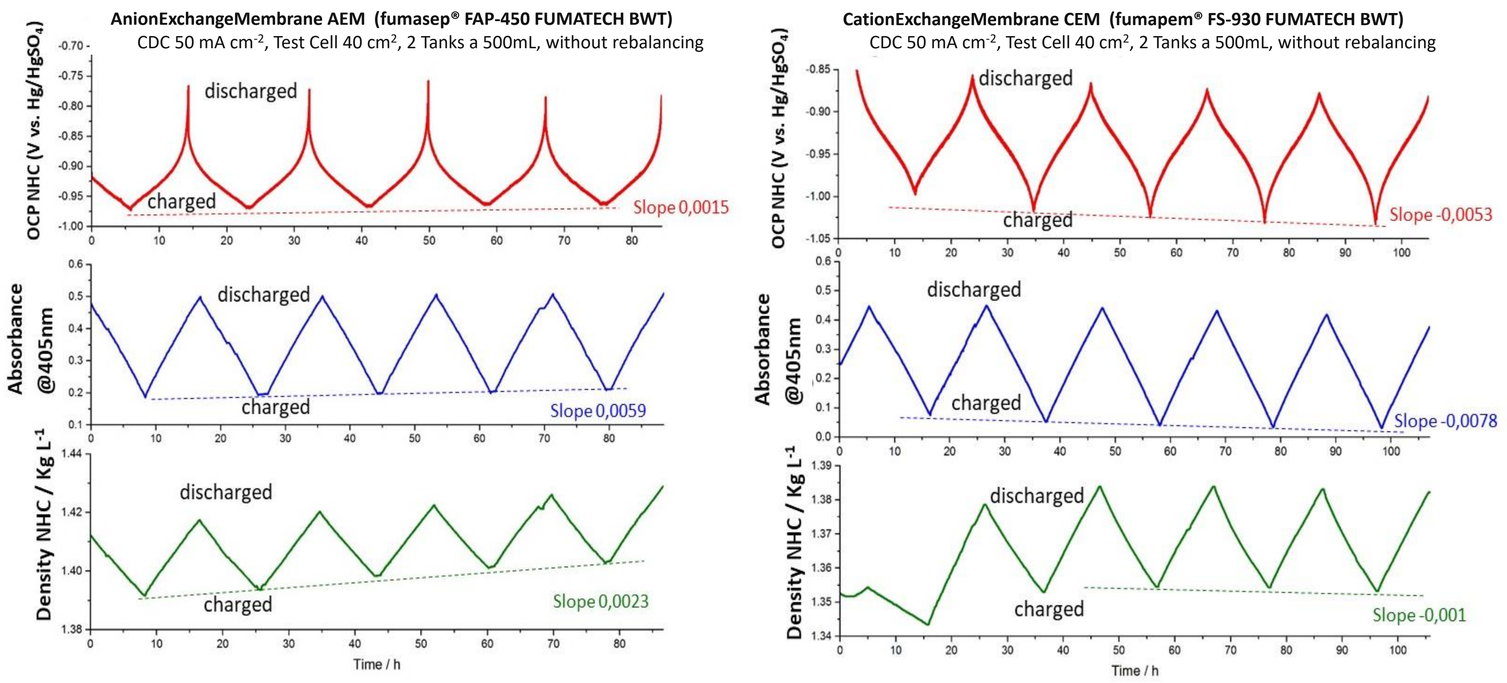

## SOC monitoring test set up



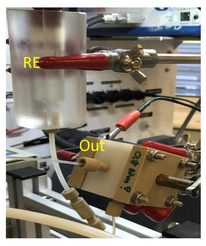


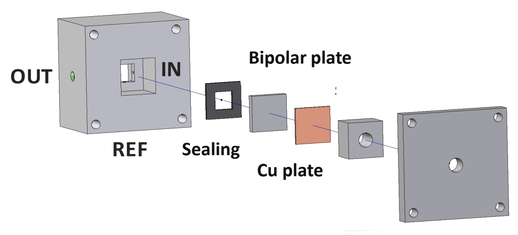

*S. Ressel, F. Bill, L. Holtz, N. Janshen, A. Chica, T. Flower, C. Weidlich, T. Struckmann, J. Power Sources, 378 (2018) 776*

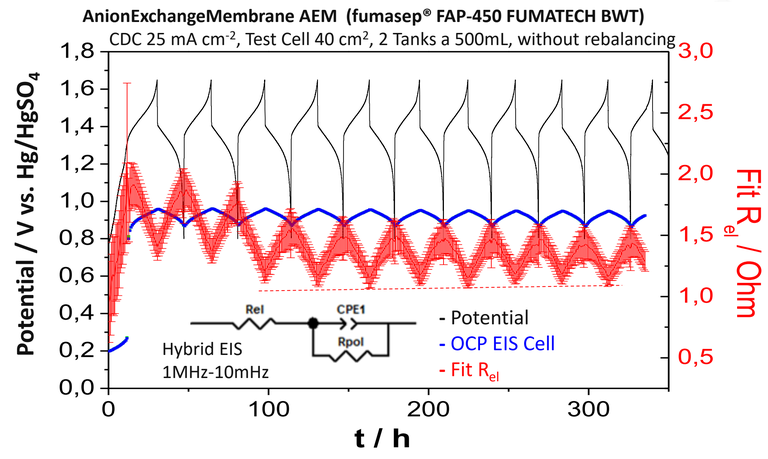
## SOC monitoring at negative half cell (NHC)



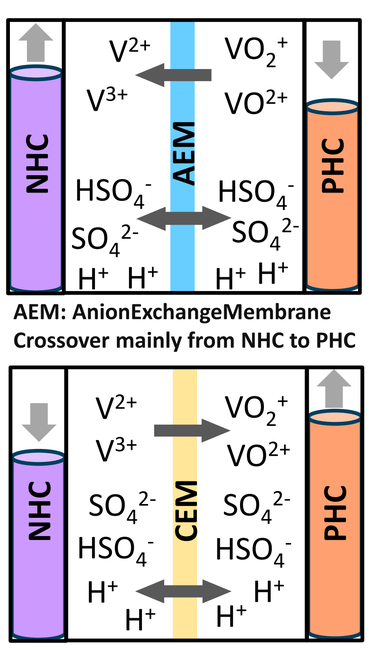

## Impedance monitoring (NHC)




## Crossover Direction

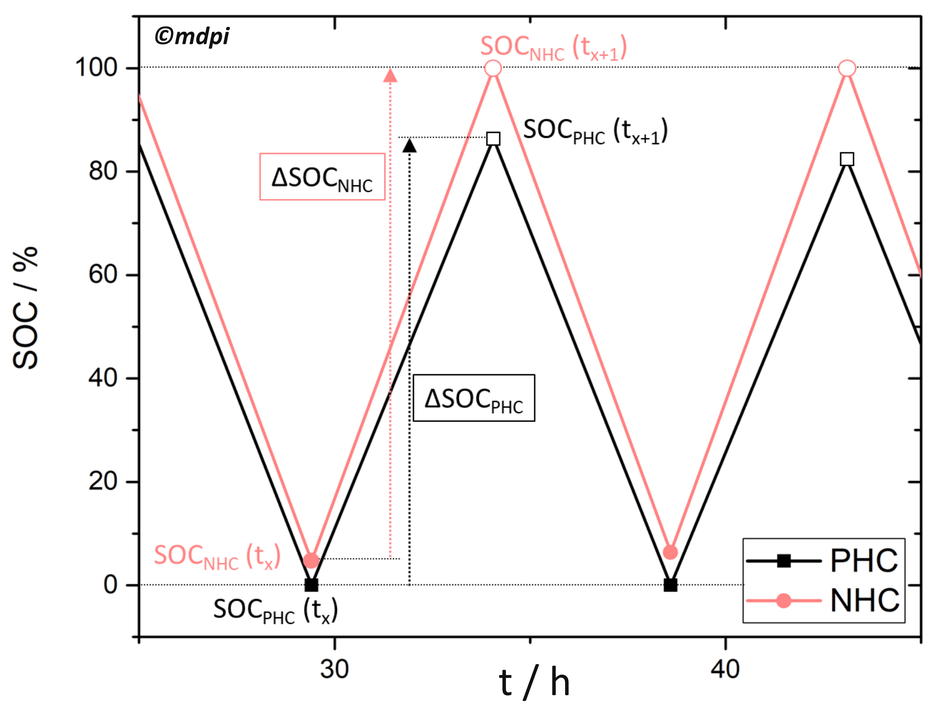



AEM: AnionExchangeMembrane
Crossover mainly from NHC to PHC




CEM: CationExchangeMembrane
Crossover mainly from NHC to PHC

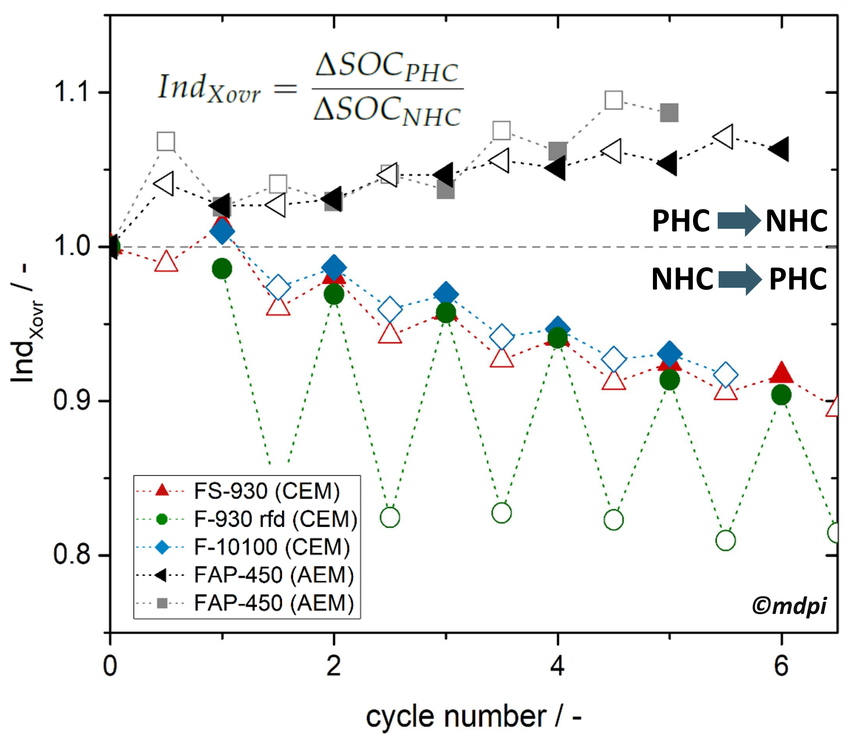
## SOC monitoring




$$\Delta SOC_{PHC} = SOC_{PHC}(t_{x+1}) - SOC_{PHC}(t_x)$$

$$\Delta SOC_{NHC} = SOC_{NHC}(t_{x+1}) - SOC_{NHC}(t_x)$$

## Crossover Index




*T. Haisch, H. Ji, C. Weidlich, Electrochim. Acta, 336 (2020) 135573*

*T. Haisch, H. Ji, L. Holtz, T. Struckmann, C. Weidlich, Membranes, 11 (2021) 232*