

Investigation of graphite-based electrodes
for Vanadium Flow Cell

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Several graphite-based electrodes are investigated for vanadium flow battery applications. These materials are characterized both as-received and after chemical or electrochemical treatments. The chemical treatment causes a cleaning of the electrode surface from adsorbed oxygen species or labile bonded functional groups in highly graphitic samples. Whereas, carbonaceous materials characterized by smaller graphitic domains or a higher degree of amorphous carbon show an increase of oxygen functional groups upon chemical and electrochemical pre-treatments. An increase of oxygen species content on the surface above 5 % causes a decrease of electrochemical performance determined by an increase of ohmic and charge transfer resistance.

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