Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Salt-templated porous carbon-carbon composite electrodes for application in vanadium redox flow batteries

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S1. Pore size distribution

S2. X-ray diffraction analysis

S3. Energy-dispersive X-ray spectroscopy

S4. TGA measurement

S1. Pore size distribution

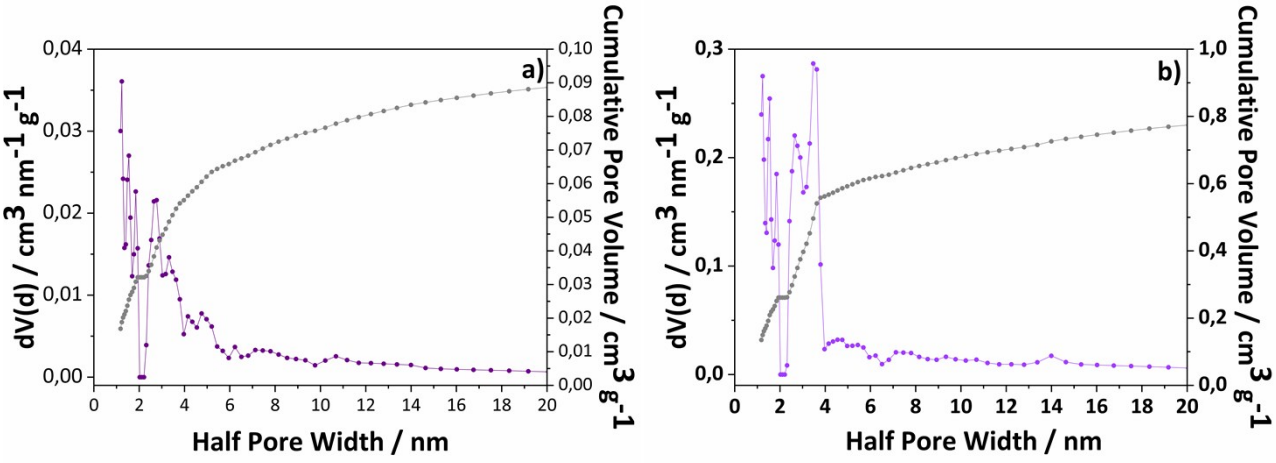

Figure S 1: Pore size distributions of the composite electrode (a) and the bulk material (b).

S2. X-ray diffraction analysis

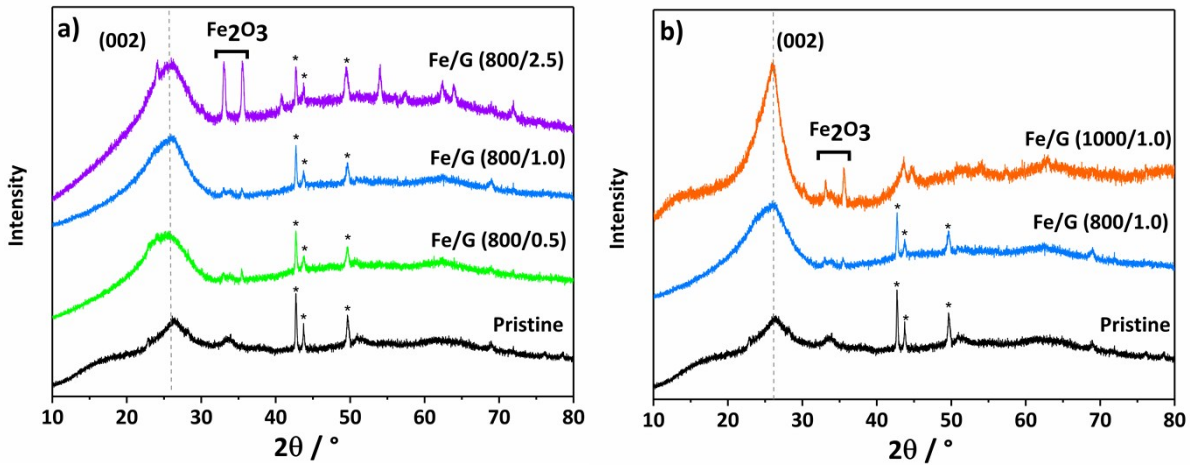

Figure S 2: X-ray diffraction patterns for carbon felts a) graphitized at 800 °C with different weight percentages of catalytic iron and b) graphitized at different temperatures. Reflections marked with a star are assigned to a damaged scatter and do not belong to the carbon material.

The pristine and the treated carbon felts exhibit a characteristic reflection at 2θ = 25.5°, corresponding to the C(002) reflection, attributed to the interlayer stacking of graphitic planes. A temperature of 800 °C is not high enough to initiate significant graphitization, as indicated by the not distinctive and rather broad reflection. However, with higher iron content the C(002) reflection increases slightly in intensity (Figure S 2a). Additional reflections at 2θ = 33.2° and 35.6° can be attributed to residual iron oxide (Fe_2O_3) in the felts still present after washing, when higher weight percentages of iron were used. Remaining iron oxide is also recognized as a shoulder at the (002) reflections. From Figure S 2b it can be seen that for graphitizing temperatures of 1000 °C the relative intensity of the C(002) reflection increases visibly while the reflection width decreases.

S3. Energy-dispersive X-ray spectroscopy

Table S1: Elemental composition of the composite electrode based on Energy-dispersive X-ray spectroscopy.

Element	Atom percentage
C	89.6
N	4.5
O	3.2
Na	0.4
Cl	1.3
Zn	0.8

S4. TGA measurement

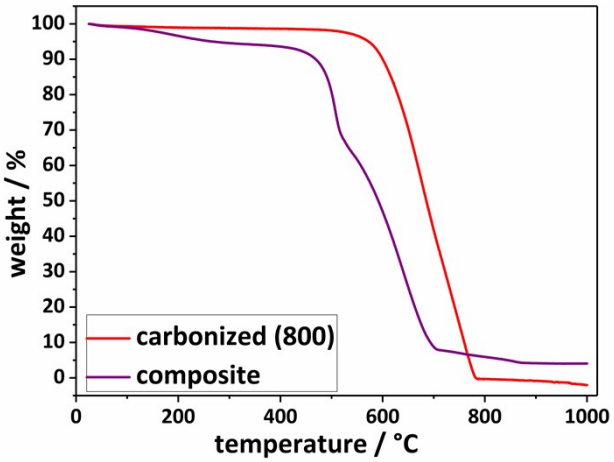

Figure S 3: TGA measurements of the composite electrode and the carbonized felt.