

Supplementary information

Synthesis of mesoporous carbon spheres via soft-template route for catalyst support in PEMFC cathode

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Table S1: Relative nitrogen and carbon compositions of C_{FAH} sample analyzed by XPS

System	N 1s (%)				C 1s (%)						
	Pyridinic	Pyrolic	Graphitic	N-Oxide	sp ² C-C	sp ³ C-C	C-O	C-N	O-C=O	O-C=O-N	π-π
C _{FAH}	21.3	54.2	15.5	9	20	47.8	9.2	7	5.8	5.6	4.6

Table S2: Volume of pore type in carbon systems

System	Total* V _{pore} (cm ³ g ⁻¹)	V _{pore} (cm ³ g ⁻¹)	V _{pore} (%)		
	Micro [#]	Meso ⁺	Micro [#]	Meso ⁺	
C _{FRH}	0.3	0.23	0.07	77	23
C _{FAH}	0.5	0.27	0.23	54	46
C _{Vulcan}	0.31	0.06	0.25	20	80

* cumulative pore volume
[#] pores in range between 0.7 and 2 nm (supermicro according to IUPAC)
⁺ pores in the range between 2 and 36 nm

N₂ physisorption isotherm of carbon powders:

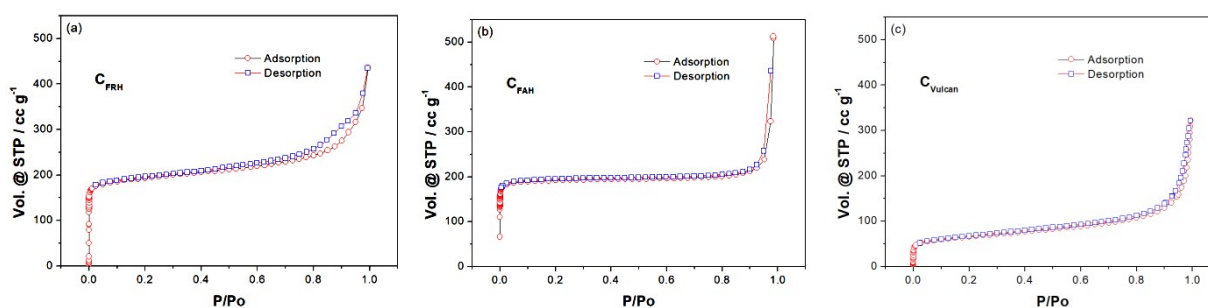


Fig S1. BET adsorption/desorption isotherms of as-prepared carbon (a) FRH, (b) FAH and (c) Vulcan.

ADT cycles under RRDE:

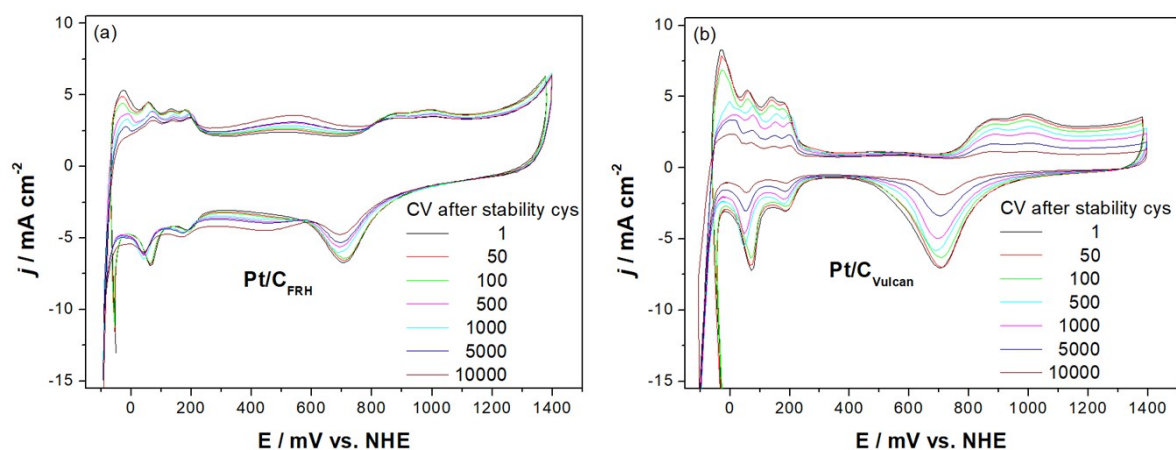


Fig. S2: CVs of 40 wt% (a) Pt/C_{FRH} (b) Pt/C_{Vulcan} ($80 \mu\text{g}_{\text{Pt}} \text{cm}^{-2}$) catalyst on glassy carbon RRDE cell during ADT in N₂-saturated 0.5 M H₂SO₄ at 1 V s^{-1} and room temperature.

ADT cycles of GDEs:

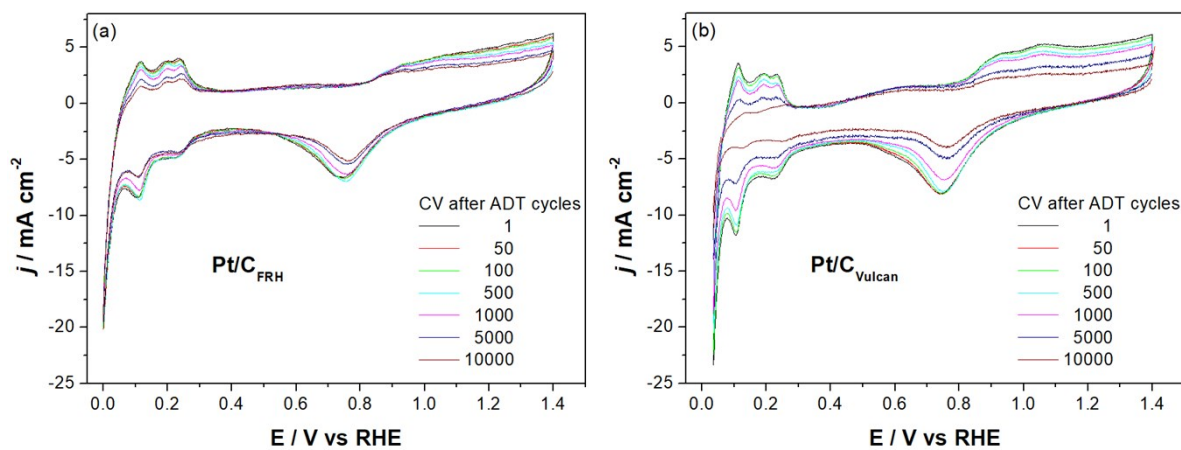


Fig. S3: CVs of 40 wt% (a) Pt/C_{FRH} (b) Pt/C_{Vulcan} ($0.25 \text{ mg}_{\text{Pt}} \text{cm}^{-2}$) GDE during ADT in N₂-saturated 0.5 M H₂SO₄ at 1 V s^{-1} and room temperature.