

Supplementary Information

Methodology to calculate the mass of platinum in the electrodes

The platinum mass (m_{Pt}), in mg, was calculated with the proportions obtained in the EDS and TGA analyses. The m_{Pt} values were obtained using the equation:

$$m_{Pt} = \frac{m_{cat}}{(f_{M:C}) \times (f_{M1:M2})}$$

m_{cat} = total mass used to prepare ink, in eppendorf;

$f_{M1:M2}$ = mass ratio between Pt and Fe, provided by EDS analysis;

$f_{M:C}$ = proportion of mass between metal and carbon, data taken from TGA analyses;

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Table S1. Examples of data for ink preparation of vitreous carbon electrodes, in an eppendorf containing 100 mL of isopropyl alcohol (95%) / Nafion (5%) solution.

Composition of the Synthesis	m_{cat} (mg)	$f_{Pt:Fe}$	$f_{M:C}$	Volume deposited (L)	Mass of Pt (g)
Pt/C	2.35	1	0.20	5.0	23.5
Pt ₉₅ Fe ₀₅ /C	2.40	0.95	0.13		14.8
Pt ₇₅ Fe ₂₅ /C-hydraz.	2.15	0.75	0.06		4.8

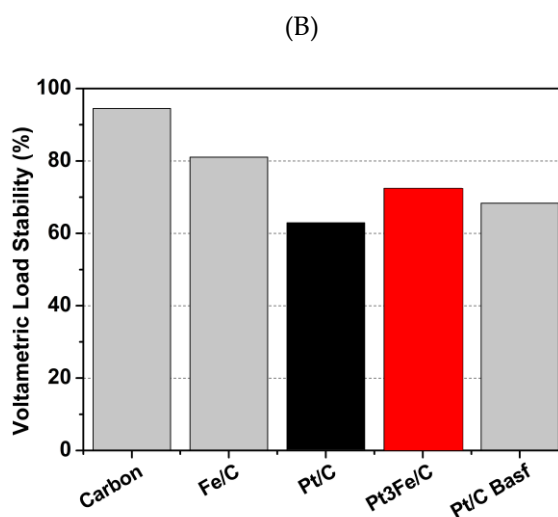
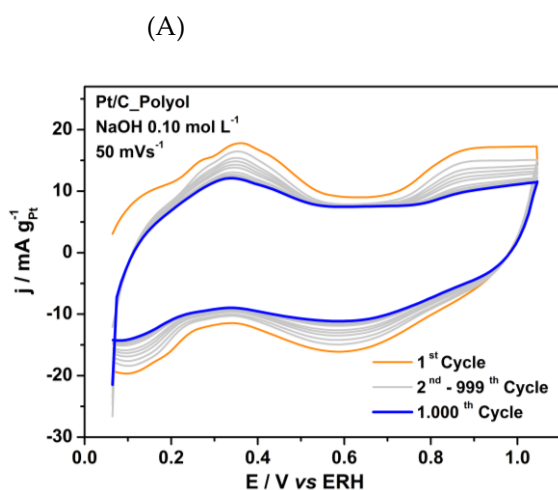


Figure S1. Stability test (A) and % voltammetric stability (B). Cycles 1000, 50 mVs⁻¹, supporting electrolyte NaOH 0.1 mol L⁻¹.