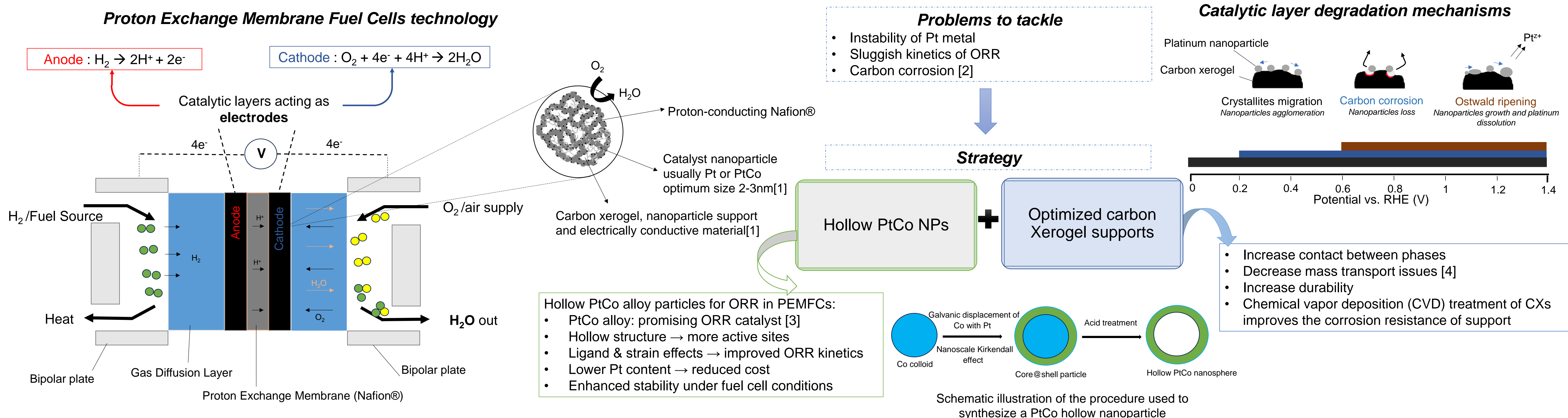
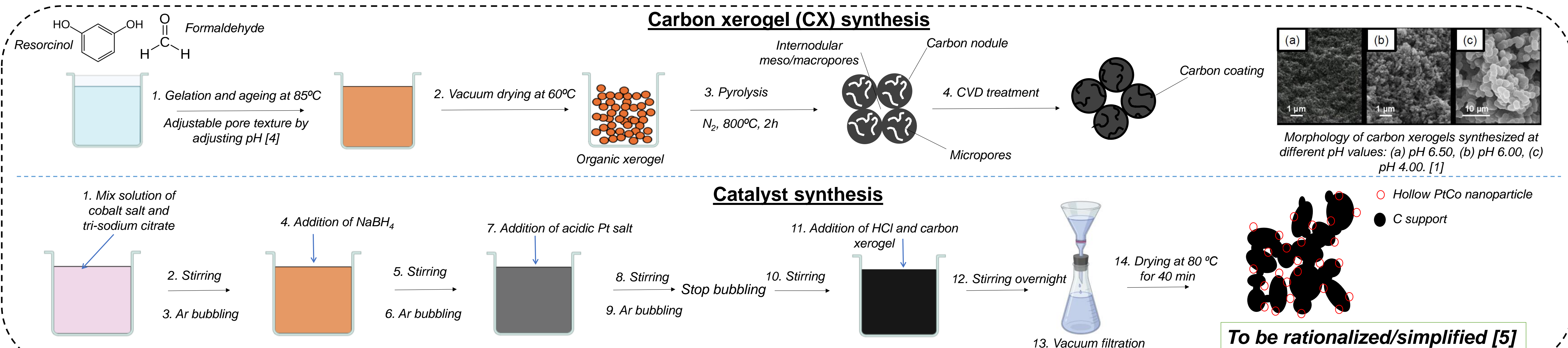


CONTEXT

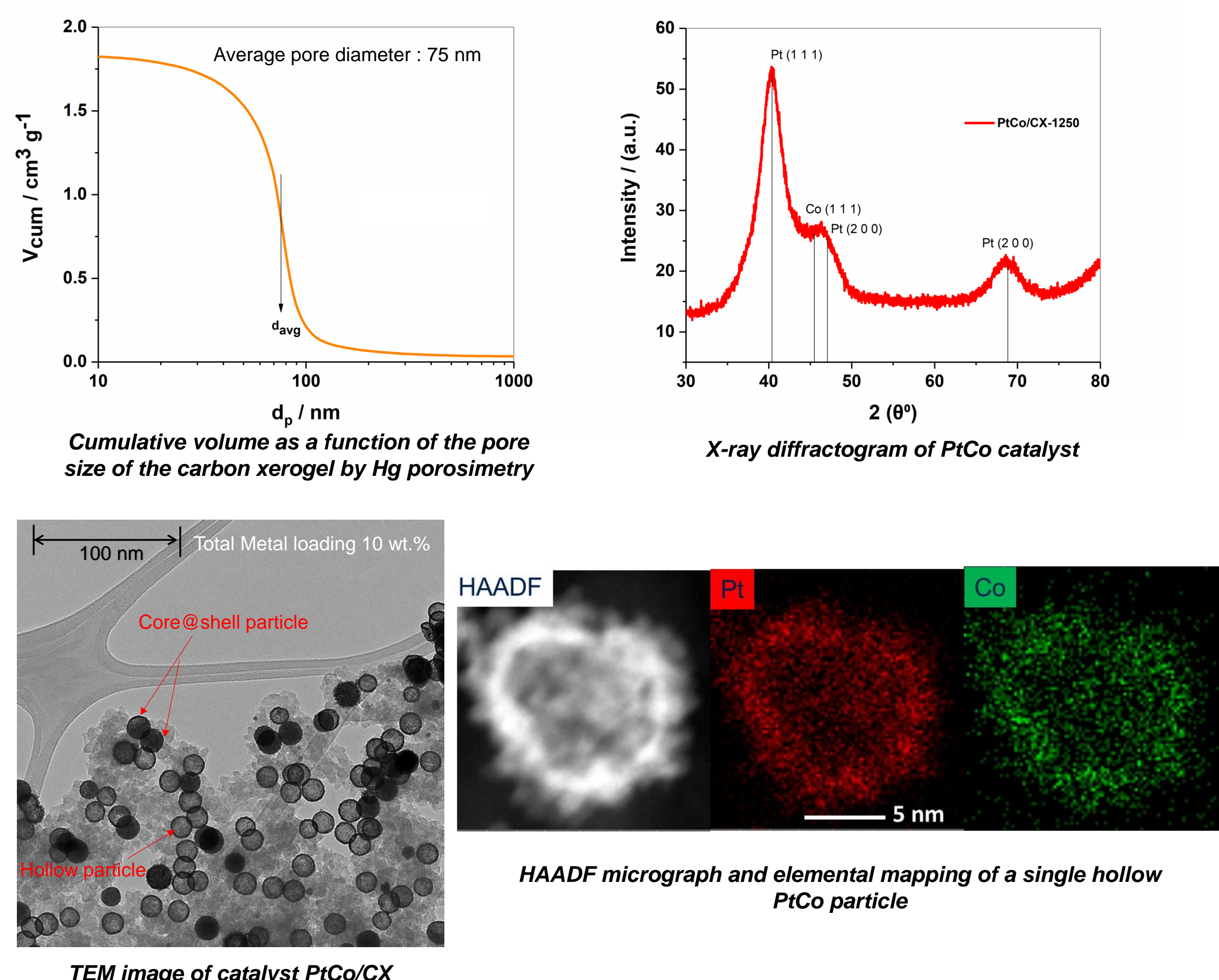


SYNTHESIS



RESULTS

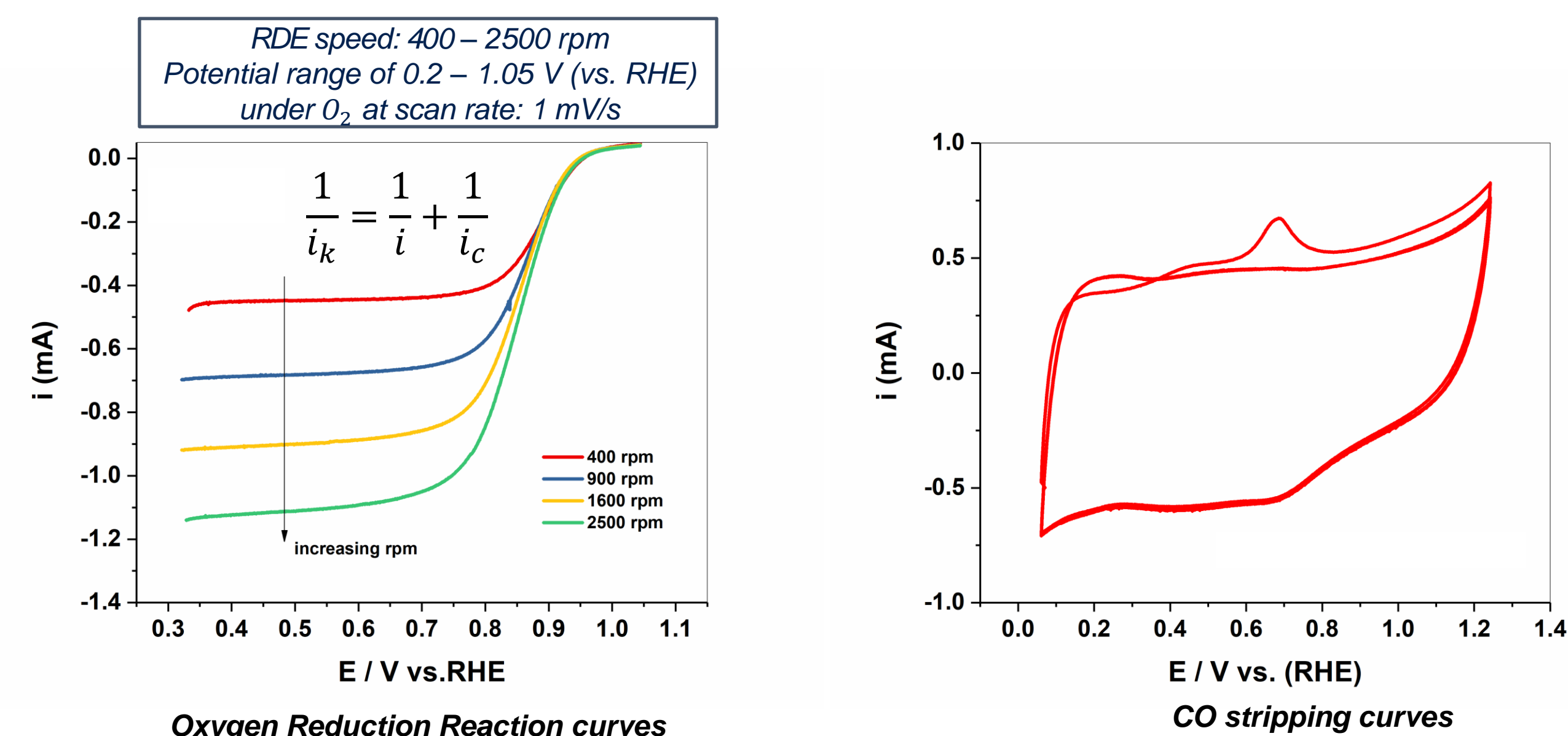
Physico-chemical characterization



Catalyst properties determined from physicochemical analyses

Catalyst	ICP-AES		TEM							XRD
	Pt _{ICP} at. %	Co _{ICP} at. %	d _{TEM} (nm)	σ (nm)	d _s (nm)	d _v (nm)	t _{TEM} (nm)	σ _{TEM} (nm)	t _v (nm)	
PtCo/CX-1000	60	40	46	7.0	48	49	3.0	0.6	3.3	3.4
PtCo/CX-1250	85	15	58	4.0	58	59	3.5	0.6	3.3	3.6
PtCo/CX-1400	74	26	56	7.6	58	59	3.4	0.4	3.6	3.3

Catalytic performances on Rotating Disk Electrode (RDE)



Catalyst initial performances

	ECSA (m ² /g _{Pt}) ± 10%	SA (A/m ² _{Pt}) ± 10%	MA (A/g _{Pt}) ± 10%
Commerical PtC (20 wt. %)	75	0.43	32
PtCo/CX-1000	30	2.67	80
PtCo/CX-1250	41	1.92	79
PtCo/CX-1400	31	2.58	81

ECSA: Electrochemically active surface area; SA: specific activity; MA: mass activity

CONCLUSIONS

- ❖ Hollow PtCo nanoparticles supported on carbon xerogel were synthesized via a sacrificial templating method approach.
- ❖ Metal loading (TGA), pore size (Hg porosimetry), alloy composition (ICP-AES), and hollow structure with alloy formation (TEM, HAADF-STEM-EDX, XRD) were confirmed, demonstrating the successful synthesis of hollow PtCo catalysts with promising structural and compositional properties.
- ❖ The initial performance of hollow PtCo/CX catalysts were evaluated using electrochemical techniques such as CO stripping and ORR measurements on Rotating Disk Electrode.
- ❖ They exhibit a relatively small electroactive specific surface area (ECSA: 30 – 41 m²/g_{Pt}) due to the large diameter of the hollow particles (46–56 nm). However, they show high specific activity (1.9 – 2.7 A/m²_{Pt}) and mass activity (79 – 81 A/g_{Pt}), measured at 0.9 V vs. RHE in 0.1 M HClO₄ electrolyte.
- ❖ Further electrochemical assessment, including Accelerated Stress Tests (ASTs) in Rotating Disk Electrode (RDE) and full Membrane-Electrode Assembly (MEA) configurations, is planned for the next phase of this study.

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