

**EUROPEAN COMMISSION – FCH JU**

**HORIZON 2020 PROGRAMME - TOPIC H2020-FCH-02-4-2019**

**New Anion Exchange Membrane Electrolysers**

**GRANT AGREEMENT No. 875024**



Anion Exchange Membrane Electrolysis for Renewable Hydrogen Production on a Wide-Scale

## **ANIONE – Deliverable Report**

D4.3 – Publishable report on electrocatalysts and recombination catalyst development for AEM electrolysis

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Deliverable No.	ANIONE D4.3	
Related WP	WP4	
Deliverable Title	Publishable report on electrocatalysts and recombination catalyst development for AEM electrolysis	
Deliverable Date	31-12-2021	
Deliverable Type	REPORT	
Dissemination level	Confidential – member only (CO)	
Lead Beneficiary	CNRS	
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Checked by	Antonino S. Aricò (CNR)	15-03-2022
Reviewed by (if applicable)		
Approved by	Antonino S. Aricò (CNR)	15-03-2022
Status	Final	15-03-2022

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This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (JU) under grant agreement No 875024. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe research. The information and views set out in this publication does not necessarily reflect the official opinion of the European Commission. Neither the European Union institutions and bodies nor any person acting on their behalf, may be held responsible for the use which may be made of the information contained therein.

**Publishable summary**

The deliverable 4.3 concerns the development of critical raw materials-free (CRM-free) electrocatalysts for water electrolysis based on anion exchange membranes (AEM). A NiFe-oxide electrocatalyst was used at the anode whereas a series of metallic electrocatalysts was investigated for the cathode, such as Ni, NiCu, NiMo, NiMo/KB. These were compared to a benchmark Pt/C cathode. CRM-free anode and cathode catalysts were synthesized with a crystallite size of about 10 nm. Among the CRM-free cathodes, the NiMo/KB catalyst showed the best performance in the AEM electrolysis cell achieving a current density of 1 A cm<sup>-2</sup> at about 1.8 V/cell when it was used in combination with a NiFe-oxide anode and a 50 μm thick Fumatech FAA-3-50<sup>®</sup> hydrocarbon membrane. Post operation analysis of electrocatalysts after specific durability tests allowed better comprehension of the modifications occurring with time. Preliminary studies about a recombination catalyst approach are also reported.

## 9 Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

Project partners:

#	Partner	Partner Full Name
1	CNR-ITAE	CONSIGLIO NAZIONALE DELLE RICERCHE
2	CNRS	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE
2.1	UM	UNIVERSITE DE MONTPELLIER
3	POCELLTECH	POCELL TECH LTD
4	TFPH (PV3)	TFP HYDROGEN PRODUCTS (FORMALLY PV3 TECHNOLOGIES LTD)
5	IRD	IRD FUEL CELLS A/S
6	HYDROGENICS	HYDROGENICS EUROPE NV
7	UNR	UNIRESEARCH BV



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