next Generation Automotive membrane electrode Assemblies

Results

Project Information

GAIA
Grant agreement ID: 826097

Funded under
SOCIETAL CHALLENGES - Climate action, Environment, Resource Efficiency and Raw Materials

Total cost
€ 4 493 025,00

EU contribution
€ 4 493 025,00

Closed project

EC signature date
13 December 2018

Coordinated by
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE
CNRS
France

Start date
1 January 2019

End date
30 June 2022

Deliverables

Documents, reports (8)

Communication and dissemination pack comprising 2 published articles, 6 conference communications, project brochure and Year 1 newsletter, and short video on fabrication steps to an automotive MEA.
Survey of past and future communication and dissemination activities and plan for the use of project results

Post-test MEA analysis report

Characterisation method for ionomer-support interaction strength developed

Fuel cell operation conditions, performance and durability requirements are defined

Demonstration of a catalytic entity showing 0.7 A/mg Pt, in an MEA test and a surface area > 40 m²/g Pt after 30,000 cycles from 0.6 to 0.925 V

Test protocols defined and documents issued. Baseline characterisation of state of the art automotive MEAs in full size FC hardware completed

Baseline ionomer and reinforcement components delivered

Websites, patent filings, videos etc. (1)

Project website

Publications
Current challenges related to the deployment of shape-controlled Pt alloy oxygen reduction reaction nanocatalysts into low Pt-loaded cathode layers of proton exchange membrane fuel cells

Author(s): Lujin Pan, Sebastian Ott, Fabio Dionigi, Peter Strasser
Published in: Current Opinion in Electrochemistry, Issue 18, 2019, Page(s) 61-71, ISSN 2451-9103
Publisher: Elsevier
DOI: 10.1016/j.coelec.2019.10.011

Seed-Mediated Synthesis and Catalytic ORR Reactivity of Facet-Stable, Monodisperse Platinum Nano-Octahedra

Author(s): Elisabeth Hornberger, Valentina Mastronardi, Rosaria Brescia, Pier Paolo Pompa, Malte Klingenhof, Fabio Dionigi, Mauro Moglianetti, Peter Strasser
Published in: ACS Applied Energy Materials, Issue 4/9, 2021, Page(s) 9542-9552, ISSN 2574-0962
Publisher: American Chemical Society
DOI: 10.1021/acsaem.1c01696

Enhancing the activity and stability of carbon-supported platinum–gadolinium nanoalloys towards the oxygen reduction reaction

Author(s): C. A. Campos-Roldán, F. Pailloux, P.-Y. Blanchard, D. J. Jones, J. Rozière, S. Cavaliere
Published in: Nanoscale Advances, 2021, ISSN 2516-0230
Publisher: Royal society of chemistry
DOI: 10.1039/d1na00740h

Advancements in cathode catalyst and cathode layer design for proton exchange membrane fuel cells

Author(s): Yanyan Sun, Shlomi Polani, Fang Luo, Sebastian Ott, Peter Strasser, Fabio Dionigi
Published in: Nature Communications, Issue 12/1, 2021, ISSN 2041-1723
Publisher: Nature Publishing Group
DOI: 10.1038/s41467-021-25911-x
Rational Design of Carbon-Supported Platinum–Gadolinium Nanoalloys for Oxygen Reduction Reaction

Author(s): Carlos A. Campos-Roldán, Frédéric Pailloux, Pierre-Yves Blanchard, Deborah J. Jones, Jacques Rozière, Sara Cavaliere
Published in: ACS Catalysis, Issue 11/21, 2021, Page(s) 13519-13529, ISSN 2155-5435
Publisher: American Chemical Society
DOI: 10.1021/acscatal.1c02449

Design and Validation of a Fluidized Bed Catalyst Reduction Reactor for the Synthesis of Well-Dispersed Nanoparticle Ensembles

Author(s): Elisabeth Hornberger, Henrike Schmies, Benjamin Paul, Stefanie Kühl, Peter Strasser
Published in: Journal of The Electrochemical Society, Issue 167/11, 2020, Page(s) 114509, ISSN 1945-7111
Publisher: The Electrochemical Society
DOI: 10.1149/1945-7111/aba4eb

Influence of the Carbon Support on the Properties of Platinum–Yttrium Nanoalloys for the Oxygen Reduction Reaction

Author(s): C. A. Campos-Roldán, A. Parnière, N. Donzel, F. Pailloux, P.-Y. Blanchard, D. J. Jones, J. Rozière, and S. Cavaliere
Published in: ACS Applied Energy Materials, Issue 5, 3, 2022, Page(s) 3319–3328, ISSN 2574-0962
Publisher: ACS publications
DOI: 10.1021/acsaem.1c03922

Last update: 22 January 2023

Permalink: https://cordis.europa.eu/project/id/826097/results

European Union, 2024