



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project CATAPULT

novel CATALyst structures employing Pt at Ultra Low and zero loadings for auTomotive MEAs

Project CATAPULT proposes to develop a radically new concept for automotive PEM fuel cell catalysts based on novel structures wherein platinum is deposited as an extremely thin layer ( $<3$  nm) on corrosion resistant supports of various morphologies, including particulate, nanofibrous and nanotubular, as well as "nano-hierarchical" combinations of these. In this approach, platinum is deposited using atomic layer deposition as thin, contiguous and conformal films that allow development of extended platinum or platinum alloy surfaces. Non-PGM catalysts will be developed via the tailored synthesis of metal-organic frameworks for their use either sacrificially to generate the C/N support for non-PGM species, or directly as a non-PGM catalyst. Hybrid ultra-low Pt/non-PGM catalysts and catalyst layers will also be investigated as a further novel approach. Increased fundamental understanding from supporting theoretical modelling will provide guidance to the strategies developed experimentally and to the down-selection of the new corrosion-resistant supports and their supported catalyst designs. Down-selected catalysts will be integrated into novel electrode designs and into MEAs incorporating state of the art membranes best adapted for automotive power trains, and evaluated according to protocols reproducing the stresses encountered in a drive cycle. The candidate MEA best satisfying performance and stability targets will be scaled-up for further assessment at large MEA and short stack levels. Techno-economic assessment will consider the scale up processability, and the impact of MEA performance and durability on stack costs. The well-balanced partnership, comprising two large industries (including an automotive OEM), two SMEs, two research organisations and two universities, will ensure close cooperation between industrial and institute partners, know-how, experience, research leadership, complementarity and industrial relevance.

## Project Information

**Type of project :** Research

**Timing :** 01/06/2013 > 31/05/2016

**Project website:** <http://www.catapult-fuelcells.eu/>

**Project Budget :** 4.679.600 €

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## Funding

European Union through FCH JU: Grant agreement 325268 - [CORDIS link](#)

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## Project partners

**Coordinator :**

UNIVERSITE DE MONTPELLIER

**Partners :**

[Johnson Matthey Fuel Cells Limited](#)

[Teknologian tutkimuskeskus VTT Oy](#)

VOLKSWAGEN AG

BENEQ OY

TECHNISCHE UNIVERSITAET MUENCHEN

UNIVERSITAET ULM

PRETEXO

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**Sub project(s)**

**Sub project 1**

**Country:** France

**Address:**

163 RUE AUGUSTE BROUSSONNET 34090 MONTPELLIER

**Sub project categories**

Research

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Project Id: 924

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