



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project CATHCAT

Novel catalyst materials for the cathode side of MEAs suitable for transportation applications

Novel low temperature fuel cell (FC) cathode catalyst and support systems will be designed and synthesized. The focus will be on highly active catalyst materials for polymer electrolyte membrane fuel cells (PEMFC) for transportation applications. These materials will be fully characterized, benchmarked and validated with a multi-scale bottom up approach in order to significantly reduce the amount of precious metal catalyst loadings (< 0.15 g/kW) and to vastly improve fuel cell efficiency and durability. Thereby, materials compatible and stable under automotive fuel cell environment and conditions will be investigated in order to reach a FC lifetime of 5000h. These targets are highly relevant to the call topic requesting ambitious, highly novel concepts for next generation European membrane electrode assemblies (MEAs) for transportation applications. Numerical simulations will be used in order to identify which alloy compositions to strive for in the experimental work. These alloys will be synthesized both in the form of well defined model compounds as well as in the form of nanoparticles. Different modified support materials will be studied. For the NPs, there will be two stages of preparation, the small scale preparation to create well defined NPs for preliminary assessment of their performance and stability, and, subsequently, up-scaling for MEA production. Supported NP catalysts and model catalysts will be tested using electrochemical methods and Surface Science approaches. After up-scaling MEAs based on improved cathode catalysts and improved supports will be assembled using advanced Nafion- based and high temperature membrane based electrolytes. These will be tested for performance and durability using procedures established in automotive industry and previous EU projects.

## Project Information

**Type of project :** Research

**Timing :** 01/01/2013 > 31/12/2015

**Project website:** <http://www.cathcat.eu/>

**Project Budget :** 3.088.327 €

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## Funding

European Union through FCH JU: **Grant agreement 303492 - CORDIS link**

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## Project partners

**Coordinator :**

TECHNISCHE UNIVERSITAET MUENCHEN

**Partners :**[DVGW - German Technical and Scientific Association for Gas and Water](#)[University of Modena and Reggio Emilia \(UNIMORE\)](#)[FORTH/ICEHT - Foundation for Research and Technology - Hellas/ Institute of Chemical Engineering Sciences](#)[TOYOTA MOTOR EUROPE NV/SA](#)

JRC - JOINT RESEARCH CENTRE - EUROPEAN COMMISSION

UNIVERSITE DE POITIERS

CHALMERS TEKNISKA HOEGSKOLA AB

ION POWER INC CORP

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**Sub project(s)****Sub project 1****Country:** Germany**Address:**

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**Sub project categories**

Research

Project Id: 925

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