A new catalyst for PEM anode electrolyser

CHEMISTRY/ MATERIALS

Ref : MA00378

MARKET CHALLENGES

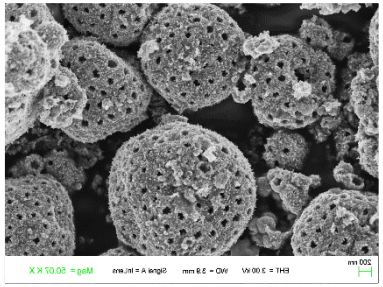
Hydrogen is today a possible substitute for hydrocarbons and an efficient way to accelerate the integration of renewable energies. Traditional solutions for hydrogen production by reforming or gasification of hydrocarbons are less suitable and not sufficient to meet at the same time growing demand for hydrogen and environmental constraints.

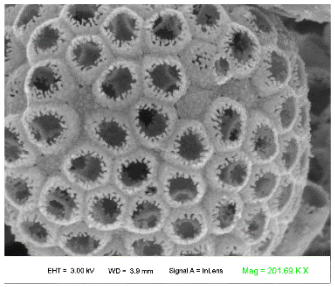
Hydrogen production by electrolysis of water using PEM (Proton Exchange Membrane) technology is the right solution to meet these various problems. However, the deployment of this technology is hampered by some technological locks such as finding a high-performance catalyst enabling the design of large production units.

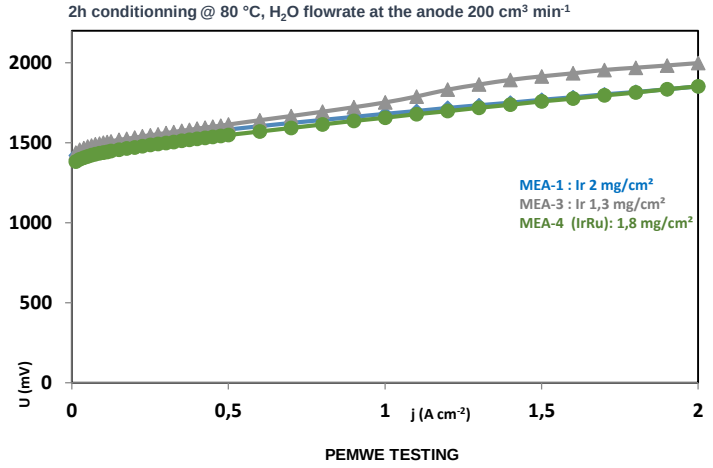
INNOVATIVE SOLUTION

The material proposed here is a catalyst for the anode of the PEM electrolysis. This catalyst based on Ir / IrO_2 commonly used in PEM technology is characterized by its structure. Indeed, the spherical and porous structure improves the catalytic properties by maximizing the number of active surfaces thus helping to accelerate the dissociation reaction of water while participating in the better transportation of gas produced.

It is also possible to associate with this catalyst another material such as ruthenium as is common in this type of application.







PEMWE TESTING

SUGGESTED APPLICATIONS

- Catalyst for anodes for PEM electrolyser
- Catalysts for chemical reaction
- Energy storage

COMPETITIVE ADVANTAGES

- The new structure allows to optimize the catalyst properties by increasing the number of active surface.
- The manufacturing process is easily reproducible
- Cost reduction: The effectiveness of this catalyst would reduce the quantities usually used for a similar performance

DEVELOPMENT STATUS

The catalyst has been prepared at laboratory level and the first tests carried out are promising as shown in the graph.

The difference in potential measured at 1 A.cm² is near to 1.7v

IP RIGHTS

Patent application filed in June 2017

HYDROGEN PRODUCTION | PEM ELECTROLYSER | ENERGY STORAGE | ELECTRO-CATALYST | IMPROVED CATALYST PROPERTIES

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