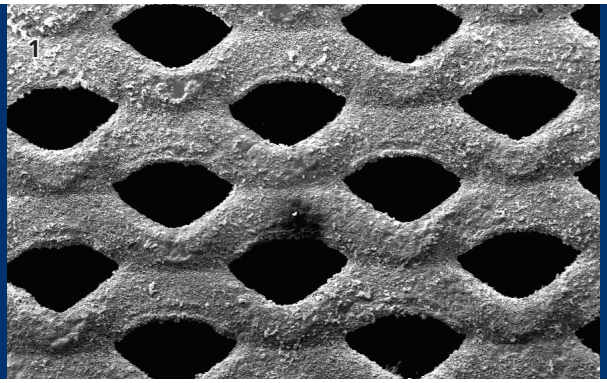
ADVANCED ALKALINE ELECTROLYSIS

2nd Workshop of ELYNTEGRATION

elyntegration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Goal: Technical challenges and solutions for electrolysers connected to the electricity grid

2 Panels: Materials for AEL / Manufacturing and System

Experts: from science and industry

Venue: Fraunhofer IFAM Dresden

Date: September 19, 2018

FCH FUEL CELLS AND HYDROGEN JOINT UNDERTAKING

Contact

Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM Branch Lab Dresden

Winterbergstrasse 28
01277 Dresden | Germany

Dr. rer. nat. Lars Röntzsch
Phone: +49 351 2537 411
E-mail: Lars.Roentzsch
@ifam-dd.fraunhofer.de

Dr. rer. nat. Christian Immanuel Müller
Phone: +49 351 2537 416
E-mail: Christian.Mueller
@ifam-dd.fraunhofer.de

Ha FUNDACIÓN PARA EL DESARROLLO DE LAS NUEVAS TECNOLOGÍAS DEL HIDRÓGENO EN ARAGÓN

Fraunhofer IFAM

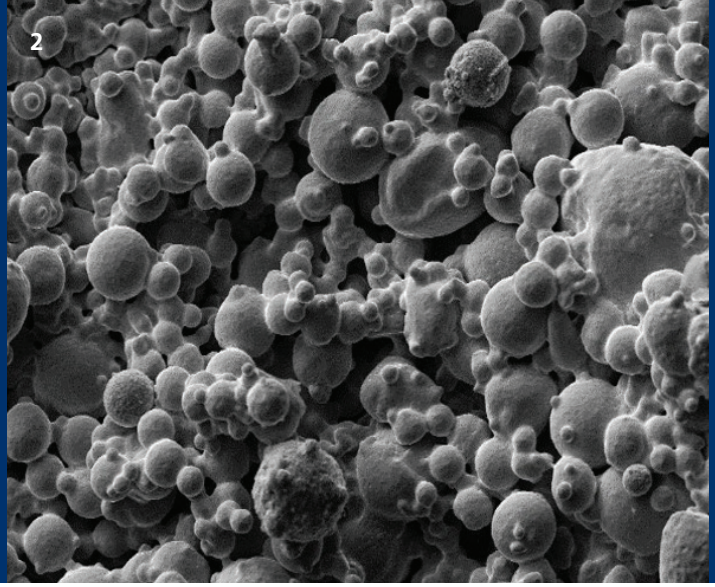
iht INDUSTRIE HAUTE TECHNOLOGIE

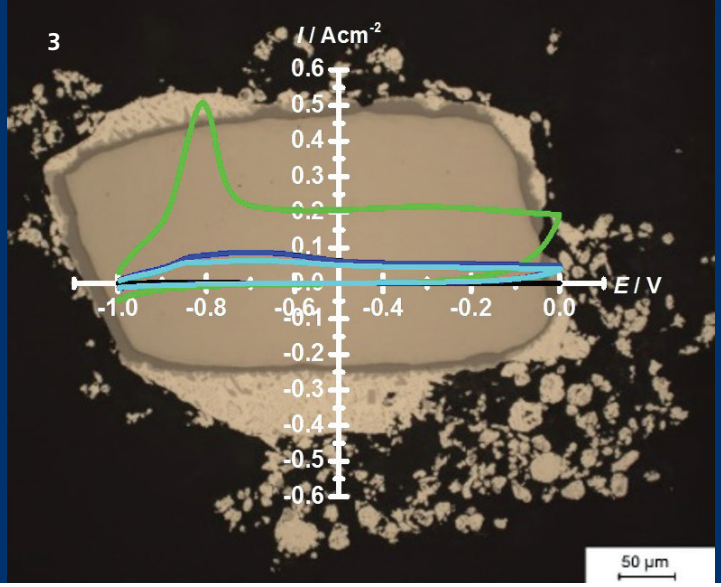
Inycom innovation technologies

vito

IAEW Institute of Power Systems and Power Economics | RWTH AACHEN UNIVERSITY

1 *Electrode for alkaline electrolysis,* **2** *Electrolyzer test bench*





The Project

The strategic goal of ELYNTEGRATION is the design and engineering of a robust, flexible and cost competitive Multi Megawatt alkaline water electrolyser, based on IHT technology, capable of producing - with a single stack - up to 4.5 ton H_2/day for energy applications.

Alkaline Water Electrolysis Developments

ELYNTEGRATION will deal with cell design and improvements at stack level, including new materials for electrodes and innovative membranes, with the capability of working at high performance in a broad range of the electrolyser load. VITO and Fraunhofer IFAM are in charge of the materials development, while IHT will lead the design of the cell topology and assembly of the final stack solutions, giving also support to the technical decisions.
The definition and design of an optimized balance of plant (BoP) for the dynamic operation of the electrolyser will be led by FHA, including the analysis of the BoP components and streams which could derive in lower costs of the system, with the participation of industrial and technological partners (INYCOM and IHT).

An advanced communication and control system will be developed, according to the requirements of end-users in order to enhance the flexibility of the electrolyser providing grid services. INYCOM will be the technology provider in charge of the developments, working together with IAEW for the definition of the services and requirements.

Testing

Technical developments will be tested step by step and continuously during the project: from ex-situ characterization at laboratory level to in-situ testing at different scales (micro pilot to industrial size). The most promising results obtained in the project will be included in a final demonstration electrolyser working in an operational environment. Once validated and demonstrated at prototype level, the advanced constructive features will be integrated in the design of a multi-MW single stack alkaline electrolyser.

Market and Business Preparation

A feasibility study and market potential assessment will be conducted to determine the best possible markets, sectors and countries for the final product obtained after the ELYNTEGRATION project. The market study will focus on the national policies towards renewable energy and energy storage, with special attention to electricity prices in the power market and the provision of grid services to minimize the price of the hydrogen production. The business climate and risk perception of investors will be analysed as well.
An exploitation strategy will be developed, including a detailed business plan for the ELYNTEGRATION final product , which will be presented to the hydrogen community of the EU and different stakeholders like TSOs, DSOs, utilities, grid operators, etc. in workshops and events during the project progress.

The Consortium

ELYNTEGRATION project is carried out by a multi-disciplinary consortium, coordinated by FHA, well-balanced and with complementary expertise, which will aim at achieving the project objectives. The Consortium includes an alkaline electrolyser manufacturer, research organizations to develop the new designs and components (FHA, VITO, IFAM, IAEW) and an engineering and technology provider (INYCOM).

3 *Catalyst coating,* **4** *Cross section and test voltammogram of an electrode*