Ευρωπαϊκή Ένωση
Ευρωπαϊκό Ταμείο Περιφερειακής Ανάπτυξης

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΟΙΚΟΝΟΜΙΑΣ & ΑΝΑΠΤΥΞΗΣ
ΕΙΔΙΚΗ ΓΡΑΜΜΑΤΕΙΑ ΕΤΠΑ & ΤΣ

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ, ΕΡΕΥΝΑΣ & ΘΡΗΣΚΕΥΜΑΤΩΝ

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ ΕΡΕΥΝΑΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ

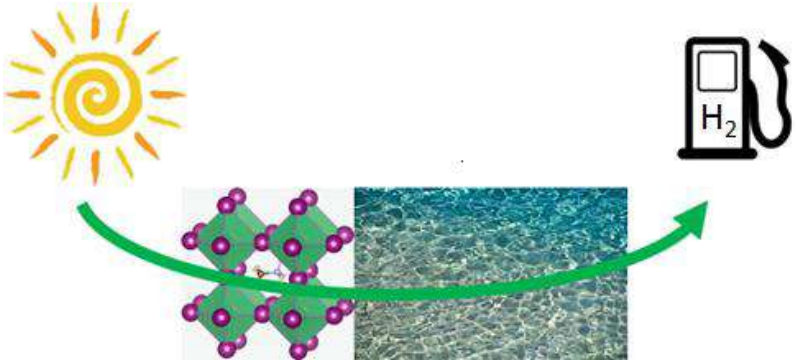
ΕΠΑνΕΚ 2014-2020
ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ
ΑΝΤΑΓΩΝΙΣΤΙΚΟΤΗΤΑ ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ ΚΑΙΝΟΤΟΜΙΑ

ΕΣΠΑ 2014-2020
ανάπτυξη - εργασία - αλληλεγγύη

Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης

ERANETMED

Hydrogen Production Through Photovoltaic Energy



HYDROSOL

ERANET-MED-ENERG-11-132

Project Summary

The goal of this project is efficient, cheap, environmental safe production of H_2 for small and medium-scale use in remote areas (e.g. small Islands or inaccessible villages) with the use of solar cells based on new perovskite dyes. The H_2 is a clean fuel that can cover the majority of energy needs and the existed problems with its storage have been solved. On the other hand the solar cells can produce cheap electrical energy but it has to be consumed immediately because the storage in batteries it's expensive and unprofitable. For small communities that are not connected with the energy nets the storage of excess energy as H_2 to be used later (for production of electricity or another energy needs) it will be the perfect solution.

By using the new types of perovskites we hope to eliminate their disadvantages that are their degradation over time and radiation, as well as their toxicity. To address these issues, we are planning to test perovskites based on metals other than Pb (e.g. Sn, Bi Sb, etc.) and use two-dimensional (2D) perovskite systems [e.g. $(C_9H_{19}NH_3)_2SnBr_4$], nanoparticles of 3D systems, or quasi two-dimensional systems. The design of the perovskites will be based on our previous experience and on theoretical calculations. The prepared perovskites will be fully characterized and tested, in order to choose the most appropriate ones for the development of solar cells.

In addition, aspects such as materials used, fabrication and performance testing will be evaluated in order to achieve optimum characteristics and environmental friendliness for use by independent small units (houses, hotels etc).

The main goals of this project, except the fabrication of the specific system, are to build research and development activities between European and Mediterranean Research Institutions and to encourage a strong collaboration for renewable and clean energy fabrication.

Partners

National Hellenic Research Foundation, Greece (Coordinator).
Project Director: Dr. G. A. Mousdis

- **University Of Konstanz**

Project Director Prof. Lukas Schmidt-Mende

- **Ludwig-Maximilians -Universität München - Department für Physik und CeNs**

Project Director: Prof. Jochen Feldmann
Germany

University of Sfax- Faculty of Sciences, Tunisia
Project Director: Prof. Younes Abid

Funding organizations

- **GRST - General Secretariat for Research and Technology, Greece.**
- **BMBF - Federal Ministry of Education and Research, Germany**
- **MESRST - Tunisian Ministry of Higher Education and Scientific Research, Tunisia**