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ICFO
The Institute
of Photonic
Sciences



Master in Photonics – “PHOTONICS BCN” Master ERASMUS+ “EuroPhotonics”

MASTER THESIS PROPOSAL

Dates: April 2020 - September 2021

Laboratory: ENPHOCAT: ENergy, PHOtonics & CATalisys
Institution: Universitat de Barcelona
City, Country: Barcelona. Spain

**Title of the master thesis: NANOMATERIALS FOR PHOTOCATALYTIC
APPLICATIONS**

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Keywords: Nanomaterials, Nanotechnology, H₂ production, CO₂ activation

Summary of the subject (maximum 1 page): This project is based on the development of advanced nanomaterials that hold the key to open a new generation of products for clean, renewable and sustainable energy. These breakthroughs will be reached through the control of material properties and understanding of mechanisms and phenomena at the nanoscale and atomic level. The main challenges are to understand how to get new materials capable to obtain fuels such as hydrogen and carbon reduced forms based (i.e. methane, methanol) from the carbon dioxide re-utilization at low-cost and high-efficiency. The high efficiency solar to fuel energy conversion require features that must guarantee the device functionality: i) photon absorption, ii) charge separation and carrier current management, and iii) charge transfer involving catalyst for the expected chemical transformation.

Additional information (if needed):

* Required skills :

* Miscellaneous :