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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 PIEZOELECTRIC ENERGY HARVESTING**

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**Keywords: Nanomaterials, Nanotechnology, Piezoelectrics, ZnO, AlN.**

**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 growth of nanostructures by hydrothermal method for piezoelectric applications will be demonstrated by using piezoresponse atomic force microscope (PFM) and with the support of a piezoelectric test device. This low-cost and fast selective-area synthesis of nanomaterials paves the way to new promising applications, such as bioelectronic applications, energy generation or self-powered sensing.

**Additional information (if needed):**

\* Required skills :

\* Miscellaneous :