ICFO



New Faculty Member and Group Leader

Dr. Pelayo Garcia de Arquer will join ICFO from University of Toronto

October 13, 2020

CFO's NEST program, supported by Fundacio Cellex and Fundacio Mir-Puig, allows the institute to offer outstanding opportunities for young scientists aiming to start and lead an independent research group. We are very pleased to announce a new member of the program, Dr F. Pelayo Garcia de Arquer, who will join ICFO as a new faculty member and Group Leader, coming from the University of Toronto. Pelayo will lead a program seeking to reduce the growing CO2 emissions to revert global warming and climate change.

Dr. Garcia de Arquer studied telecommunications engineering, mathematics, and photonics. He earned his PhD from ICFO, during which he investigated how the interaction between nanostructured semiconductors and metals could be manipulated dictating key optoelectronic properties such as absorption, charge transport and doping. He also explored new types of devices where highly energetic electrons in metals could be harnessed for

sensing and energy harvesting. He applied his findings to make more efficient photodetectors and solar cells.

Pelayo joined the University of Toronto as a Connaught Postdoctoral Fellow in Bioinspired Ideas for Sustainable Energy. In his postdoctoral work, he expanded his research in the field of clean energy. He explored the use of emerging liquid-processed materials such as perovskites, low dimensional perovskites, quantum dots, and their combination, to control energy transfer at the nanoscale. Soon, he turned his attention to energy storage based on hydrogen and CO2 electroreduction. Pelayo, in this area, advanced in the understanding and performance of catalysts for these reactions, offering new insights into their design considering material transformations, and gas, electron and ion management.

At ICFO, Garcia de Arquer will establish a research program focusing on CO2 Mitigation Accelerated by Photons (CO2MAP). His group will explore the conversion of CO2 into renewable fuels and commodities using clean energy. This has the potential to reduce the massive carbon footprint of existing manufacturing and transport processes. Pelayo's group will use photon-based spectroscopies to shed light on the reaction mechanisms and catalyst reconstruction processes that drive CO2 electroreduction at high conversion rates. Combined with modeling, his group will use these insights to enable the informed design of catalysts and systems that achieve the selectivity, activity, energy efficiency and stability needed for this technology to make a significant impact in the global effort to revert climate change.