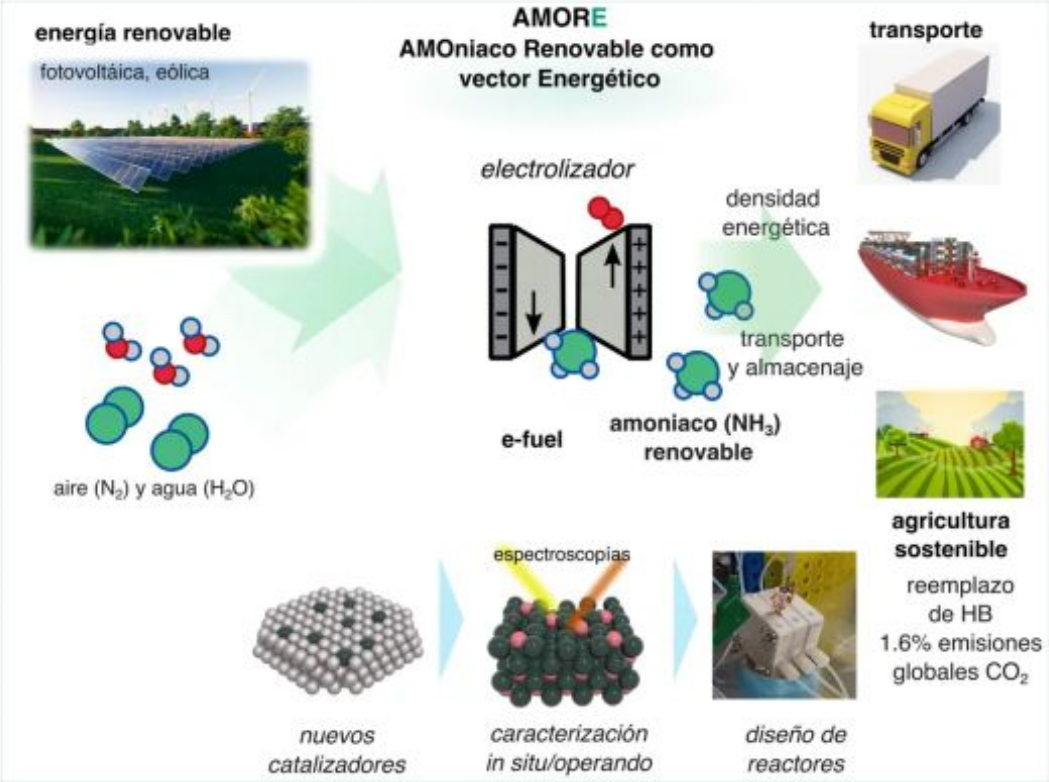

The Ramon Areces Foundation finances new Clean Planet project at ICFO

Through AMORE project, ICFO Prof F. Pelayo Garcia de Arquer will purse the development of clean renewable ammonia as a new energy vector

April 17, 2023

ICFO Prof F. Pelayo Garcia de Arquer, leader of the CO2 Mitigation Accelerated by Photons research group, has been awarded a grant from the Ramon Areces Foundation's XXI National Competition for the award of Grants for Research in Life and Material Sciences for the project **AMORE** (Renewable Ammonium as an energy vector/ AMOniaco Renovable como vector Energetico).

The race against global warming requires a transition towards renewable energy, sustainable resources, and circular economies. The development of solar fuels using renewable energy, which combined a high energy density and reduced costs (considering their generation, transport, and storage) represents an alternative to displace fossil fuels and reduce

greenhouse gas emissions. The **AMORE** project focuses on the development of catalysts and systems that enable the direct electrosynthesis of green ammonia using air, water, and renewable electricity (eNRR). As an energy vector, ammonia offers several advantages compared to hydrogen in terms of ease and cost of transport and storage, as well as a higher energy density. As a chemical vector, the green electrosynthesis of ammonia has the prospect of displacing incumbent highly energy- and carbon-intensive processes for the generation of fertilizers, which rely on natural gas and the Haber-Bosch reaction; contributing to a large fraction of global greenhouse gas emissions. AMORE pursues these challenges through advances in the fundamental understanding of the processes involved in the eNRR. The CO2 Mitigation Accelerated by Photons group will deploy in situ spectroscopies to guid in the design of nano/micro-structured catalysts that, based on metal and polyme composites, achieve improved the performance of the eNRR towards its technoeconomi viability

Prof Garcia de Arquer leads a research group at ICFO that explores the use of photons t shed light on the process of capturing and converting greenhouse gases such as carbo dioxide, helping understand the various mechanisms involved. i¿½This grant is a hi hly welcome support for our young group to carry out an ambitious project that will allow u to grow and make a mark in our field,i¿½ he explains. i¿½We are proud to partner with The Ramon Areces Foundation that has prioritized climate change and renewable energy as a key research area that warrants their support. This will help to strengthen ICFO's gro ing Clean Planet P

ogram.i¿½ The Ramon Areces Foundation is a private foundation created with the broad bjective of fostering scientific and technical research in Spain and education and culture in general. In short, the Foundation´s main objective is to create a solid scientific and technological structure in Spain in order to improve people´s lives and find solutions to the challenges that the modern society have to face, especially in the dimensions of science, ed cation, cultur