



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE 6812

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Chimica**

Scientist- in - charge: **Prof. Valentina Colombo**

**Ane Ciruela Zunzunegui**

## CURRICULUM VITAE

### PERSONAL INFORMATION

Surname	Ciruela Zunzunegui
Name	Ane

### PRESENT OCCUPATION

Appointment	Structure
Student and scholarship holder	I have recently completed my Master's degree program. I have been awarded a scholarship by The Government of the Basque Country to conduct research in the department of Organic and Inorganic Chemistry at the University of the Basque Country.

### EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	Degree in Chemistry	University of the Basque Country	2023
Master	MSc in New Materials	University of the Basque Country and University of Cantabria	2024
Summer internship	Laboratory practices	University of the Basque Country	2024

### REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City
2019	Science and Technology Faculty	Bilbao (Basque Country)



## FOREIGN LANGUAGES

Languages	level of knowledge
Spanish	Native (C2)
Basque	Native (C1)
English	Level B2

## AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2024	IKASIKER scholarship granted by the Basque Government to collaborate on research and technological development projects within the university environment. During my study period, I actively contributed to the synthesis of new titanium gels with metal-organic structures for hydrogen production. This experience enabled me to acquire skills in photocatalysis and characterization, thus contributing to the advancement of knowledge in green hydrogen production. The contract associated with this scholarship ended in August.

## TRAINING OR RESEARCH ACTIVITY

### Description of activity:

I graduated in Chemistry in July 2023 from the Faculty of Science and Technology at the University of the Basque Country, completing my Bachelor's Thesis with the research group on "Metal-Organic Materials" in the Department of Organic and Inorganic Chemistry. I carried out the Bachelor's Thesis (120 hours) under the supervision of professors Garikoitz Beobide and Sonia Pérez, achieving a grade of 8.9. In that work, Last year, I completed my Bachelor's Thesis with the same research group, focusing on titanium-based new MOFs. During this time, I gained experience in various synthesis methods, understanding the parameters that influence synthesis and working with solvothermal techniques. I also studied different ways of characterization using techniques like powder and single-crystal X-ray diffraction with FullProf and Olex programmes, as well as infrared spectroscopy to analyze material structure. Additionally, I adopt knowledge of differential thermal analysis and nuclear magnetic resonance to determine the chemical formula. This experience provided me with a comprehensive understanding of materials synthesis and characterization methods.

As of today, I have recently completed the Interuniversity Master's Degree in New Materials at UPV/EHU and the University of Cantabria (UC), and also I have done the Master's Thesis with the aforementioned research group through the IKASIKER collaboration scholarship, granted by the Basque Government (240 hours). In that work, I synthesized titanium-based metal-organic framework aerogels to generate hydrogen through water electrolysis. Consequently, I expanded my knowledge of various synthesis methods, including not only solvothermal techniques but also those conducted at ambient temperature. The characterization of this work included NMR and TG analysis to determine the molecular formula. We doped the aerogel with other metals, such as ruthenium and copper, to observe their homogeneous incorporation via XRF and SEM-EDS. To quantify the doping, we measured the mother liquors using ICP-MS. Additionally, as observed by SEM and TEM, these metals exhibited macroporosity, prompting us to perform N<sub>2</sub> adsorption. Finally, in line with our objective, we measured hydrogen generation via gas chromatography, obtaining positive results.

I have also completed various courses on risk prevention and hazardous waste management in the laboratory, and I have attended conferences on scientific dissemination. Additionally, we are in the process of publishing a research article based on the work developed in my Master's Theses.



## CONGRESSES AND SEMINARS

Date	Title	Place
27 <sup>th</sup> May 2024	Hybrid Halide Perovskites: Taking advantage of ion migration and stability (2 hour)	Donostia International Physics Center
7 <sup>th</sup> May 2024	Innovative Polymers for a Sustainable Future (2 hours)	PoliMad
26 <sup>th</sup> March to 27 <sup>th</sup> April 2024	Course of Resolution of Extended X-ray Absorption Fine Structure (EXAFS) spectra using the Athena and Artemis software programs (12 hours)	Faculty of Science and Technology of the University of the Basque Country
26 <sup>th</sup> March 2024	Development and industrialization pathways of quasi-solid state electrolytes for primary zinc air batteries (2 hours)	Cegasa
20 <sup>th</sup> March 2024	Tutorial for FullProf for Powder Sample Structure Resolution (12 hours).	University of the Basque Country
7 <sup>th</sup> February 2024	I attended a day of seminars organized by BCmaterials, which included in-depth discussions on advanced scientific topics. The sessions covered "Inelastic Neutron Scattering to Identify Adsorption Sites in Metal-Organic Frameworks," "Magnetic Nanostructures for Multifunctional Applications: A Micro to Nanoscale Perspective," and "Neutron Diffraction Studies of Shape Memory Magnetic Alloys", each lasting two hour.	BCMaterials
23 <sup>th</sup> January 2024	Magnetic Levitation as Adsorption Characterization Technique for Paramagnetic Metal-Organic Frameworks	BCMaterials

## OTHER INFORMATION

Postgraduate courses:
Synthesis techniques: <ul style="list-style-type: none"><li>- Solvothermal synthesis</li><li>- Techniques of Diffusion Tubes</li><li>- Microwave and oven synthesis</li></ul>
Caracterization techniques: <ul style="list-style-type: none"><li>- X ray Difracction</li><li>- Termogravimetric analysis (TGA)</li><li>- Nuclear magentic resonance (NMR)</li></ul>



- Gas adsorption desorption analysis
- UV-Vis spectroscopy
- FTIR
- Scanning electron microscopy (SEM)
- Transmission electron microscopy (TEM)
- Diffuse reflectance spectroscopy
- X-ray fluorescence (XRF)

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Please note that CV WILL BE PUBLISHED on the University website and It is recommended that personal and sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

Please DO NOT SIGN this form.

Place and date: Vitoria-Gasteiz, 22<sup>th</sup> of July of 2024