

CURRICULUM VITAE

EUROPEAN FORMAT FOR THE CURRICULUM VITAE



PERSONAL INFORMATION

Name and Surname

Nuria Jiménez Arévalo

Email

nuria.jimenezarevalo@uniroma.it

Current position

Postdoctoral researcher (Assegnista di Ricerca nella Sapienza Università di Roma)

STUDIES

• Date

02/2020-07/2023

• Name and Institution

PhD in Advanced Materials and Nanotechnology

Universidad Autónoma de Madrid (Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain)

Thesis: *Growth and characterization of borocarbonitride and metal sulfide electrocatalysts for hydrogen production from water*

• Grades

Sobresaliente (Cum Laude)

• Date

09/2018-07/2019

• Name and Institution

Master en Energías y Combustibles para el Futuro (Energies and fuels for the Future)

Universidad Autónoma de Madrid (Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain)

Thesis: *Synthesis and characterization of semiconducting thin films and their use for water splitting*

• Grades

8.85/10 (*Special Mention*)

• Date

09/2014-07/2018

• Name and Institution

Bachelor Degree in Physics

Universidad Autónoma de Madrid (Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain)

Thesis: *Exploring new materials for hydrogen photogeneration*

WORK EXPERIENCE

• Date

01/03/2024-NOW

• Organisation

Sapienza Università di Roma (Piazzale Aldo Moro, 5, 00185 Roma, Italy)

• Role

Assegnista di Ricerca (Postdoctoral researcher)

• Tasks

Material characterization by XPS, UPS and Raman spectroscopy using ultra-high vacuum systems. Modification of electronic properties by alkali metal doping. Preparation of samples by the exfoliation of van der Waals materials. Writing

scientific report, projects and articles. Reparation and optimization of UHV chambers and gas lines.

- Date 01/03/2023-29/02/2024
 - Organisation Sapienza Università di Roma (Piazzale Aldo Moro, 5, 00185 Roma, Italy)
 - Role **Assegnista di Ricerca (Postdoctoral researcher)**
 - Tasks Name of the project: Tuning the electronic properties of 2D Materials.
Material characterization by XPS, UPS and Raman spectroscopy using ultra-high vacuum systems. Modification of electronic properties by alkali metal doping. Preparation of samples by the exfoliation of van der Waals materials. Writing scientific report, projects and articles. Reparation and optimization of UHV chambers and gas lines.
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- Date 10/10/2022-28/02/2023
 - Organisation Fundación de la Universidad Autónoma de Madrid (Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain)
 - Role **Predoctoral researcher (Physics and Material Science)**
 - Tasks Research in collaboration with the company DH2 Energy Spain S.L.
 - Material synthesis by metal sulfurization
 - Material characterization by different morphological, structural and compositional techniques.
 - Testing materials as electrodes for hydrogen production.
 - Elaborating a prototype of electrolyser.
 - Writing scientific reports company oriented.
-
- Date 15/02/2022-14/08/2022
 - Organisation Fundación de la Universidad Autónoma de Madrid (Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain)
 - Role **Predoctoral researcher (Physics and Material Science)**
 - Tasks Research in collaboration with the company DH2 Energy Spain S.L.
 - Material synthesis by metal sulfurization
 - Material characterization by different morphological, structural and compositional techniques.
 - Testing materials as electrodes for hydrogen production.
 - Elaborating a prototype of electrolyser.
 - Writing scientific reports company oriented.
-
- Date 01/05/2021-31/12/2021
 - Organisation Universidad Autónoma de Madrid (Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain)
 - Role **Predoctoral researcher (Physics and Material Science)**
 - Tasks Predoctoral researcher.
 - Material synthesis
 - Material characterization by different morphological, structural and compositional techniques.
 - Testing materials as electrodes for hydrogen production.
 - Writing scientific reports and scientific articles.
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- Date 01/02/2020-30/04/2021
 - Organisation Universidad Autónoma de Madrid (Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain)
 - Role **Predoctoral researcher (Physics and Material Science)**
 - Tasks Predoctoral researcher.

	• Material synthesis • Material characterization by different morphological, structural and compositional techniques. • Testing materials as electrodes for hydrogen production. • Writing scientific reports and scientific articles.
MOTHER TONGUE	Spanish
OTHER LANGUAGES	
• Reading • Writing • Oral	English Excelent (C1) Excelent (C1) Excelent (C1)
• <i>Reading</i> • <i>Writing</i> • <i>Oral</i>	Italian Excelent (C1) Good (B2) Excelent (C1)
• <i>Reading</i> • <i>Writing</i> • <i>Oral</i>	French Good (B1) Basic (A2) Basic (A2)
COMPUTING AND OTHER SKILLS	Microsoft Office (Word, Excel, Power Point) Igor Pro Data analysis with Origin and Excel (Macros)
	Programming skills in: - Python - Matlab - Visual Basic .net - Arduino
	Ultra-High Vacuum systems
OTHER	<u>PUBLICATIONS</u>
	1. Jiménez-Arévalo, Nuria, et al. "X-ray photoelectron spectroscopy of high-throughput mechanically exfoliated van der Waals materials ", <i>Nanoscale</i>, 16 (2024), 17559-17566. 2. Jiménez-Arévalo, Nuria, et al. "Protecting TiS₃ photoanodes for water splitting in alkaline media by TiO₂ coatings" <i>ACS Appl. Mater. Interfaces</i>, 16 (2024), 33696-33709. 3. Jiménez-Arévalo, Nuria, et al. "Potassium doping of vertically aligned multi-walled carbon nanotubes", <i>Journal of Chemical Physics</i>, 7 (2024), 214707 4. Tayyab, Sammar, et al, "Spectromicroscopy Study of Induced Defects in Ion-Bombarded Highly Aligned Carbon Nanotubes", <i>Nanomaterials</i>, 14, (2023), 77. 5. Jiménez-Arévalo, Nuria, et al. "MoS₂ Photoelectrodes for Hydrogen Production: Tuning the S-Vacancy Content in Highly Homogeneous Ultrathin Nanocrystals", <i>ACS Appl. Mater. Interfaces</i>, 15, (2023), 33514.

6. Jiménez-Arévalo, Nuria, et al. "Borocarbonitride Layers on Titanium Dioxide Nanoribbons for Efficient Photoelectrocatalytic Water Splitting." *Materials*, 14, (2021) 5490.
7. Jimenez-Arevalo, Nuria, et al. "Ultrathin Transparent B–C–N Layers Grown on Titanium Substrates with Excellent Electrocatalytic Activity for the Oxygen Evolution Reaction." *ACS Applied Energy Materials*, 3, (2020) 1922-1932.
8. Leardini, Fabrice, et al. "A fast synthesis route of boron–carbon–nitrogen ultrathin layers towards highly mixed ternary B–C–N phases." *2D Materials*, 6,(2019) 035015

CONGRESSES

Nuria Jiménez-Arévalo(*), Carlo Mariani, Maria Grazia Betti, Fabrice Leardini, Francesco Pandolfi, Ilaria Rago, Riccardo Frisenda. *X-ray photoelectron spectroscopy of high-throughput mechanically exfoliated van der Waals materials*. **Graphene 2024**. 25th – 28th June. 2024- Poster.

Nuria Jiménez-Arévalo(*), Carlo Mariani, Maria Grazia Betti, Fabrice Leardini, Francesco Pandolfi, Ilaria Rago, Riccardo Frisenda. *X-ray photoelectron spectroscopy of high-throughput mechanically exfoliated van der Waals materials*. **CMD 31**. 1st – 6th September 2024- Oral contribution.

Nuria Jiménez-Arévalo(*), Jinan H. Al Shuhaib, Rodrigo Bautista Pacheco, et al., Fabrice Leardini. *MoS₂ Photoelectrodes for Hydrogen Production: Tuning the S-Vacancy Content in Highly Homogeneous Ultrathin Nanocrystals*. **XXVI Jornada Jóvenes Científicos**. Instituto Nicolás Cabrera. 15th Dec. 2023- Oral contribution (invited talk).

Nuria Jiménez-Arévalo(*), Jinan H. Al Shuhaib, Rodrigo Bautista Pacheco, et al., Fabrice Leardini. *MoS₂ Photoelectrodes for Hydrogen Production: Tuning the S-Vacancy Content in Highly Homogeneous Ultrathin Nanocrystals*. **CMD30 FisMAT 2023**. 4th-8th Sept. 2023. Italia (Milan)- Oral contribution

Nuria Jiménez-Arévalo(*), Francesco Filoscia, Dario Marchiani, Sammar Tayyab, Riccardo Frisenda, Maria Grazia Betti, Carlo Mariani . *Alkali metal adsorption on highly aligned carbon nanotubes*. **CMD30 FisMAT 2023**. 4th-8th Sept. 2023. Italia (Milan)- Poster

J. H. Al Shuhaib (*), N. Jiménez-Arévalo, E. Köhler, F. J. García-García J. R. Ares, I. J. Ferrer, F. Leardini. *Strontium Titanium Chalcogenide Perovskite Photoanodes for H₂ Production*. **XII Reunión de la División de Física de la Materia Condensada de la RSEF (GEFES 2023)**. 1st-3rd February 2023. Salamanca (Spain)- Poster.

Nuria Jiménez-Arévalo(*), Jinan H. Al Shuhaib, Rodrigo Bautista Pacheco, et al., Fabrice Leardini. *Highly defective MoS₂ ultrathin nanoparticles for electrolytic hydrogen evolution*. **XXV Jornada Jóvenes Científicos**. Instituto Nicolás Cabrera. 16th Dec. 2022. Spain (Miraflores de la Sierra)- Poster.

Nuria Jiménez-Arévalo(*), Jinan H. Al Shuhaib, Rodrigo Bautista Pacheco, et al., Fabrice Leardini. *Tuning the sulfur vacancies content in ultrathin MoS₂ nanoflakes as efficient electrodes for hydrogen production*. **12th Early Stage Researchers Workshop in Nanoscience**. IMDEA Nanociencia. 15th December 2022. Spain (Madrid)- Oral contribution.

Nuria Jiménez-Arévalo(*), Jinan H. Al Shuhaib, Rodrigo Bautista Pacheco, et al., Fabrice Leardini. *Highly defective MoS₂ ultrathin nanoparticles for electrolytic hydrogen evolution*. **EMRS-Fall Meeting 2022**. 19th -23rd September 2022. Poland (Warsaw)- Oral contribution

Nuria Jiménez-Arévalo (*), Eduardo Flores, Alessio Giampietri, Marco Sbroscia,

Maria Grazia Betti , Carlo Mariani, José R. Ares, Isabel J. Ferrer, Fabrice Leardini. *Capas de TiO₂ y BCN sobre TiS₃ para la producción de hidrógeno en electrolitos acuosos* . **CNMAT 2022**. 28th June– 1st July. Spain (Ciudad Real)- Oral contribution.

Nuria Jiménez-Arévalo (*) , Eduardo Flores, Alessio Giampietri, Marco Sbroscia, Maria Grazia Betti , Carlo Mariani, José R. Ares, Isabel J. Ferrer, Fabrice Leardini. *TiO₂ and BCN coatings on TiS₃ for H₂ generation in alkaline electrolytes*. **Advanced Energy Materials 2022**. 6th -8th April 2022. UK(London)- Oral contribution.

Nuria Jiménez-Arévalo (*) , Eduardo Flores, Alessio Giampietri, Marco Sbroscia, Maria Grazia Betti , Carlo Mariani, José R. Ares, Isabel J. Ferrer, Fabrice Leardini. *TiO₂ and BCN coatings on TiS₃ for water splitting in alkaline electrolytes. Synthesis, characterization and photoelectrochemical results*. **XXIV Jornada de Jóvenes científicos. Instituto Universitario de Ciencia de Materiales Nicolas Cabrera**. 17th December 2021. Spain (Miraflores de la Sierra)- Oral contribution.

Nuria Jiménez-Arévalo (*) , Fabrice Leardini, Isabel Jiménez Ferrer, José Ramón Ares, Carlos Sánchez, Mahmoud M. Saad Abdelnabi, Maria Grazia Betti, Carlo Mariani. *2D borocarbonitride layers as efficient electrocatalyst for the oxygen evolution reaction*. **EMRS Spring Meeting 2021**. 31st May– 3rd June 2021. Virtual Conference- Oral contribution.

Nuria Jimenez-Arevalo (*) , Isabel J. Ferrer y Fabrice Leardini. *Ultrathin Transparent B-C-N layers grown on titanium substrates with excellent electro-catalytic activity for oxygen evolution reaction*. **XXII Jornada de Jóvenes científicos. Instituto Universitario de Ciencia de Materiales Nicolas Cabrera**. 19th December 2019- ral contribution.

Nuria Jimenez-Arevalo (*) , Isabel J. Ferrer y Fabrice Leardini. *Boron-Carbon-Nitrogen ultrathin nanolayers with remarkable photo-electro-catalytic activity for water splitting*. **XXI Jornada de Jóvenes científicos. Instituto Universitario de Ciencia de Materiales Nicolas Cabrera**. 21st December 2018. Spain (Miraflores de la Sierra)- Poster.

(*) author who presented the work

SEMINARS

Network seminar (PCAM)- 11 May 2023

The physics behind hydrogen production from water

PATENTS

European patent application (14 Nov 2023): METHOD FOR THE PREPARATION OF AN ELECTRODE COMPRISING A METAL SULFIDE COMPOUND EP23383160

TEACHING

Co-tutor of Master thesis (Physics- Sapienza University)- Course 2023/2024

Laboratory Assistant (Physics Laboratory II-Sapienza University)-Course 2022/2023 (48h)

Co-tutor of Master thesis (Nanotechnology Engineering- Sapienza University)- Course 2022/2023

Laboratory Assistant (Physics Laboratory II-Sapienza University)-Course 2022/2023 (48h)

SCIENTIFIC PROJEC

1 Project. Spatial investigation of strain effects on the Neel Temperature of Fe_xNi_{1-x}PS₃ compounds- Tipo 2. Nuria Jiménez Arévalo. (Sapienza University of Rome). 11/2024- 11/2025. 2.000 €.

2 Project. Tuning the S-vacancies content in highly homogeneous ultrathin MoS₂ nanocrystals, and their use as photo-electrodes for hydrogen production. Progetti per Avvio alla Ricerca - Tipo 1. Nuria Jiménez Arévalo. (Sapienza University of Rome). 11/2023- 11/2024. 2.000 €.

3 Project. MATERIALES SOSTENIBLES Y AVANZADOS PARA LA FOTOGENERACIÓN Y DETECCIÓN DE HIDRÓGENO. Jose Ramón Ares Fernández and Isabel Jiménez Ferrer. (Universidad Autónoma de Madrid). 01/09/2022-31/08/2025. 118.580 €.

4 Project. Electroodos Sintéticos de Piritita para la Generación de Hidrógeno en medio Alcalino (ESPIGHA). DH2 Energy España S.L.. Fabrice Leardini. (Universidad Autónoma de Madrid). 14/12/2021-31/12/2023. 62.485 €.

5 Project. FOTOGENERACIÓN DE H₂ MEDIANTE SEMICONDUCTORES EMERGENTES Y AJUSTABLES Y SU COMPRESIÓN A PRESIONES ULTRAALTAS MEDIANTE HIDRUROS METÁLICOS. Jose Ramón Ares Fernández and José Fco. Fernández Ríos. (Universidad Autónoma de Madrid). 01/01/2019-30/06/2022. 140.360 €.

AWARDS

2nd Price “INC Jóvenes Investigadores 2023 Chema Gómez Rodríguez”

Instituto Nicolás Cabrera (UAM)

The aim is to promote excellent work of the young scientists of the Nicolás Cabrera Institute (INC) by recognizing their contributions in high impact publications.

Graduate Student Award

EMRS– 2022 Fall Meeting

In recognition of the outstanding paper presented at the symposium “Advanced catalytic materials for (photo) electrochem. Energy Conversión III”

Best Project Award. 2nd prize.

International Summer School on nanosciences and nanotechnologies. NANOSUM-2022.

1st Award Three minute tesis 2022.

Universidades Complutense de Madrid, de Alcalá, Politécnica de Madrid, Autónoma de Madrid y rey Juan Carlos

3rd Award II Concurso #HiloTesis

Universidad Autónoma de Madrid

Special mention

Course 2018/2019

Universidad Autónoma de Madrid

SUMMER SCHOOLS

2022– SummerLIB 2022. SummerSchool about lithium batteries (50h)-. CIVIS Universities.

2022– NanoSUM 2022. SummerSchool about nanoscience. (10 days)- Universidad Aix-Marseille.

SYNCHROTRON EXPERIENCE

Antares Beamline (SOLEIL Synchrotron- France). 19/09/2023-25/09/23

OTHER COURSES

2022- Electrochemical Impedance Spectroscopy. A powerful technique for the development of Batteries.

2022- Peer Review Excellence

2021- Advanced paper writing (4h)

2020- Smart Grid. Fundamentos técnicos. EdX. (40h)

2020- Machine Learning. Miriadax. (20h)

2019- Robotic Process Automation. Escuela de Organización Industrial/ Mc Kinsey.
(358h)

Autorizzo il trattamento dei miei dati
personali ai sensi del Decreto
Legislativo 196/2003, coordinato con
il Decreto Legislativo 101/2018, e
dell'art. 13 del GDPR (Regolamento
UE 2016/679) ai fini della
pubblicazione in Trasparenza Ateneo
- Sapienza come da normativa
vigente