María Escudero Escribano

ICREA Professor | Head of NanoElectrocatalysis and Sustainable Chemistry (NanoESC) Lab | ERC Consolidator Grant PI
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Current position

ICREA Research Professor, Catalan Institute of Nanoscience and Nanotechnology ***Sep 2022 – …***

Head of NanoElectrocatalysis and Sustainable Chemistry (NanoESC) Lab and ERC Consolidator Grant PI.

Research profile

Keywords: Electrochemistry · Electrocatalysis · Atomic-scale materials engineering · Sustainable energy conversion · Power-to-X · Renewable fuels and chemicals · Sustainable chemistry · Nanoscience

Research interests: Green hydrogen technologies · CO_2 conversion · Methane-to-methanol · Nitrate reduction and C-N coupling · In situ/operando vibrational spectroscopy · Scanning probe microscopy

Prof. María Escudero Escribano's research bridges electrochemistry, atomic-scale materials engineering, and catalysis to enable sustainable energy conversion technologies. Her group develops advanced electrocatalysts and emerging electrochemical reactions that transform renewable electricity and abundant feedstocks into clean fuels and value-added chemicals.

Key scientific contributions

- **Atomic-scale design principles for electrocatalysts**, linking structure, electrolyte effects, and interfacial dynamics to control activity, stability and selectivity at electrochemical interfaces.
- **Advanced electrocatalyst materials and emerging electrochemical transformations** for the selective synthesis of fuels and chemicals powered by renewable electricity.
- ***In situ* vibrational spectroscopy and scanning probe microscopy** to track catalyst dynamics, reaction intermediates, and interfacial phenomena under realistic operating conditions.
- **Mechanistic control of small-molecule electrochemical activation (including CO_2 and methane)** through tailored interfaces, enabling selective routes to renewable fuels and value-added chemicals.

Academic metrics

- Author of 76 scientific publications in international peer-reviewed journals, including ***Science***, ***Nature Chemistry***, ***Nature Materials***, ***Nature Catalysis***, ***JACS***, and ***Angewandte Chemie***.
- Co-inventor of three patents or patent applications.
- **H-index: 38; >7400 citations** (Google Scholar, Jan 2026).
- Received >€7M total funding (€4.6M funding as sole PI).

Selected awards, honours and major grants

2024 National Research Award 'María Teresa Toral' in Chemical Science and Technology.

2024 Royal Academy of Sciences Award for Young Female Talent in Physics and Chemistry.

2022 ERC Consolidator Grant "ATOMISTIC" (2023-2028), European Research Council (PI).

2019 RSEQ Young Researchers Award, Spanish Royal Society of Chemistry.

2019 Clara Immerwahr Award, Unifying Systems in Catalysis.

2018 Princess of Girona Scientific Research Award, Princess of Girona Foundation.

2018 ECS Energy Technology Division Young Investigator Award, the Electrochemical Society.

2016 Gold Medal of the European Young Chemist Award, EuCheMS.

Previous positions and research experience

Associate Professor, University of Copenhagen (Denmark) ***Feb 2021 – Aug 2022***
Department of Chemistry, University of Copenhagen (UCPH)
- Head of the NanoElectrocatalysis and Sustainable Chemistry Group.
- PI of Villum Young Investigator Grant and co-PI of CHEAC, UCPH.

Tenure-track Assistant Professor, University of Copenhagen (Denmark) ***Mar 2017 – Jan 2021***
- Head of the NanoElectrocatalysis and Sustainable Chemistry Group.

Postdoctoral Fellow, Stanford University (United States) ***Mar 2015 – Feb 2017***
Department of Chemical Engineering and SLAC National Accelerator Laboratory, Stanford University
- PI of Sapere Aude: Research Talent Postdoctoral Grant. Professor Thomas Jaramillo's group.

Postdoctoral Researcher, Technical University of Denmark, DTU (Denmark) ***2012 – 2015***
Department of Physics, DTU
- Postdoctoral researcher. Professor Ib Chorkendorff's group.

Three-month research-stay, Prof. Wolfgang Schmickler's group, **University of Ulm (Germany), *2011***

Three-month research-stay, Dr. Nenad Markovic's group, **Argonne National Laboratory (US), *2009***

Education

Ph.D., Electrochemistry, Autonomous University of Madrid (Spain) ***2007 – 2011***
Institute of Physical Chemistry 'Blas Cabrera', Spanish National Research Council (CSIC)
- Sobresaliente *cum laude; European Doctorate* Mention. Advisor: Dr. Ángel Cuesta.

B.S., Chemical Engineering, University of Extremadura (Spain) ***2001 – 2006***
- Best academic record award of Chemical Engineering (University of Extremadura).

Top recent publications in international scientific journals

(* Corresponding author)

1. Sebastián-Pascual, Herzog, Zhang, Shao-Horn, **Escudero-Escribano***, "Electrolyte effects in proton-electron transfer reactions and implications for renewable fuels and chemicals synthesis", ***Nature Catalysis* (2025)**, *8*, 986. *(Invited).*
2. Arminio-Ravelo, Favero, **Escudero-Escribano***, "Why testing protocols matter in electrochemical methane oxidation: insights from IrO_x in acid", ***ACS Energy Letters* (2025)**, *10*, 4842. *(Invited).*
3. Costa, **Escudero-Escribano***, "Electrode-electrolyte engineering and in-situ spectroscopy for urea electrosynthesis from carbon dioxide and nitrate co-reduction", ***JACS Au* (2025)**, *5*, 1538. *(Invited).*
4. Mygind, Rost, **Escudero-Escribano***, "The hidden complexities of electrochemically active surface area measurements", ***ACS Energy Letters* (2026)**, accepted. (*Invited*).
5. Salinas-Quezada, Pedersen, Sebastián-Pascual, Chorkendorff, Biswas, Rossmeisl, **Escudero-Escribano***, "Toward understanding CO oxidation on high-entropy alloy electrocatalysts", ***Energy & Environmental Science Catalysis* (2024)**, *2,* 941. *(Front cover).*
6. Arminio-Ravelo, **Escudero-Escribano***, "Strategies toward the sustainable electrochemical oxidation of methane to methanol", ***Current Opinion in Green & Sustainable Chemistry* (2021)**, *30*, 100489. *(Invited).*
7. Jensen, Sievers, Jensen, Quinson, Arminio-Ravelo, Brüser, Arenz, **Escudero-Escribano***, "Self-supported nanostructured iridium-based networks as highly active electrocatalysts for oxygen evolution in acidic media", ***Journal of Materials Chemistry A* (2020)**, *8*, 1066. *(Invited).*
8. **Escudero-Escribano***, Malacrida, Hansen, Vej-Hansen, Velazquez-Valenzuela, Tripkovic, Schiøtz, Rossmeisl, Stephens, Chorkendorff, "Tuning the activity of Pt alloy electrocatalysts by means of the lanthanide contraction", ***Science* (2016)**, *352*, 73. ***Highly cited paper** (**top 1%,** WoS).*

Academic awards and honours

2025 **National Research Award 'María Teresa Toral' 2024** for Young Scientists in the Chemical Science and Technology Category, awarded for her innovative research in electrochemical processes and the atomic-level design of new advanced materials.

2025 **Royal Academy of Sciences Foundation Award for Young Female Talent 2024** in the Physics, Chemistry and Related Sciences Category, awarded annually to an extraordinary female scientist up to the age of 45.

2023 **'Extremeños de Hoy' Award.**

2022 **Elected Member of the Young Academy of Spain.**

2022 **ERC Consolidator Grant**, European Research Council.

2022 **Invited** to Brussels as **one of 34 leading European chemistry professors** for CEFIC's 50th anniversary, recreating the iconic 1927 **Solvay Conference photo** (youngest invited professor).

2021 **Journal of Materials Chemistry Lectureship 2021,** Royal Society of Chemistry (RSC). (*International level*).

2021 **Hypatia Young Talent Award 2021** from elEconomista.

2021 **Environment, Sustainability and Energy Division Horizon Prize: John Jeyes Award** from the **Royal Society of Chemistry** for scientific and engineering breakthroughs in the electrochemical synthesis of hydrogen peroxide. (*International level*).

2019 Shortlisted for the **Nature Research Award for Inspiring Science 2019** by *Nature*. (*International level*).

2019 **RSEQ Young Researchers Award 2019**, awarded by the Spanish Royal Society of Chemistry, RSEQ (*Angew. Chem. Int. Ed*. **2019**, *58*, 13625).

2019 **Clara Immerwahr Award 2019** from **UniSysCat** (Unifying Systems in Catalysis Cluster of Excellence in Germany), awarded for her "outstanding results in catalysis research" (*Angew. Chem. Int. Ed*. **2019**, *58*, 2940). (*International level*).

2018 **Princess of Girona Scientific Research Award 2018**, awarded for the "scientific, technological and social impact of her work".

2018 **Energy Technology Division Supramaniam Srinivasan Young Investigator Award 2018** from the **Electrochemical Society (ECS)**, awarded for her "innovative research on model electrodes for electrochemical energy conversion technologies".

2018 **Hyundai Young Talent 2018** of "Fuera de Serie".

2017 **Griess Lectureship Award** from the **Royal Society of Chemistry** (RSC).

2017 **SusChem Young Chemistry Researcher Award 2017**, in the Postdoc category (Spanish Technology Platform for Sustainable Chemistry and RSEQ).

2017 **CIDETEC Award 2016** in the category of "Young Researchers in Electrochemistry" (Electrochemistry Group of the RSEQ).

2017 Selected as **one of the five finalists of the Gerhard Ertl Young Investigator Award 2017**.

2016 **European Young Chemist Award 2016 – Gold Medal** (EuCheMS), awarded to researchers under 35 whose research in chemistry displays high level of excellence and distinction (*Angew. Chem. Int. Ed.* **2016**, *55*, 14903).

2016 **ISE Travel Award for Young Electrochemists** (International Society of Electrochemistry, ISE) to present my work at the *67th ISE Annual Meeting* in The Hague (The Netherlands).

2015 **AcademiaNet** Elected Member – Excellent women academic portal, Swiss National Science Foundation; nominated by the Danish National Research Foundation.

2014 **Travel Award** from the **Electrochemical Society** (ECS) to present my work at the *226th ECS Meeting* in Cancun (Mexico).

2013 **Best PhD Thesis in the region of Madrid** Award (RSEQ).

2013 National Award 'Pedro Sánchez': **best PhD Thesis related to Hydrogen Energy and Fuel Cells** (Spanish Hydrogen Association and Spanish Association of Fuel Cells).

2012 **Extraordinary PhD Award** (Autónoma University of Madrid).

2011 **SusChem Young Chemistry Researcher Award 2011**, in the Predoc category (Spanish Technology Platform for Sustainable Chemistry and RSEQ).

2011 **Travel Grant** from the **Group of Electrochemistry** of the RSEQ to attend the *62st ISE Annual Meeting* in Niigata (Japan).

Recent grants as sole PI

2023-2028 **ERC Consolidator Grant 2021 (European Research Council)**. *'Atomic-scale tailored materials for electrochemical methane activation and production of valuable chemicals (ATOMISTIC)'.* Awarded amount: 2 M€

2024-2027 **Proyecto de Generación del Conocimiento (Ministry of Science, Innovation and Universities, Spain)**. *'Active Site Engineering of Functional Electrocatalysts for Renewable Energy Conversion into Green Fuels (ELECTROFUEL)'.* Awarded amount: 206 000 €

2021-2023 **DFF Green Transition-Project 1** (Danish Council for Independent Research). Awarded amount: ~383 000 €.

2018-2023 **VILLUM Young Investigator Grant (Villum Foundation):** *'Atomic ensembles for clean energy and synthesis'.* Awarded amount: ~1.34 M€.

2019-2021 **DFF-Project 1:** *'High surface area support-free catalysts for oxygen electrocatalysis'.* (Danish Council for Independent Research, DFF). Awarded amount: ~300 000 €

2015-2017 **DFF-Individual Postdoctoral Grant and Sapere Aude: DFF-Research Talent Grant**. Awarded amount: ~353 000 €

Recent grants as a co-PI

2023-2026 **EIC Pathfinder Challenges Project (European Innovation Council)**. *'Integrated conversion of Nitrate and Carbonate streams (ICONIC).'* Total awarded amount: 3.96 M€; ICN2: ~430 000 €

2024-2026 **Projectes de recerca per la mitigació al canvi climatic (Generalitat de Catalunya)**. '*Towards Efficient Hydrogen Production with New Hybrid Electrocatalysts* (*HYDROCAT*).' Total awarded amount: 360 000 €; ICN2: ~120 000 €

Involvement in international centres as a co-PI

2023-2036 **Pioneer Center for Accelerating Power-to-X Materials Discovery (CAPeX)**, led by DTU.

2020-2022 **Center for High-Entropy Alloy Catalysis (CHEAC)**, led by UCPH.

2016-2022 **VILLUM Center for the Science of Sustainable Fuels & Chemicals**, led by DTU.

Organisation of international meetings and seminars

2026/03 **MATSUS 2026 Spring Meeting**, Barcelona. Co-organiser, Symposium *Breaking New Bonds: Electrocatalysis for Emerging Transformations.*

2024/03 **MATSUS 2024 Spring Meeting**, Barcelona. Co-organiser, Symposium *Materials and interfaces for emerging electrocatalytic reactions*.

2023/11 **Materials Research Society (MRS) Meeting**, Boston (US). Co-organiser, Symposium *Emerging Materials & Devices for Clean Energy & Environmental Applications*.

2023/09 **74th Annual Meeting of the International Society of Electrochemistry**, Lyon (France): Coordinator, Symposium *Operando & In Situ Characterisation of Electrochemical Interfaces*.

2022/10 **NanoGe Fall Meeting MATSUS 2022**, Barcelona: General organiser.

2021/10 **NanoGe Fall Meeting 2021** (online): Co-organiser, Symposium *Solar Fuels: In-situ and operando characterization of electrified interfaces*.

2020/11 **Annual Meeting of the Danish Electrochemical Society:** Coordinator and main organiser.

2019/11 **Annual Meeting of the Danish Electrochemical Society:** Coordinator and main organiser.

2019/05 **Visit and lecture of 2018 Chemistry Nobel Laureate Frances H. Arnold** (Professor at Caltech) at the **University of Copenhagen:** Organiser and host.

2019/05 **Mini-symposium in Electrocatalysis at the University of Copenhagen:** Organiser.

2018/11 **Annual Meeting of the Danish Electrochemical Society:** Co-organiser.

2018/09 **69th Annual Meeting of the International Society of Electrochemistry**, Bologna (Italy): Co-organiser, Symposium *Physical and Interfacial Electrochemistry*.

Selected recent invited lectures and seminars

Regularly invited to give seminars and deliver **invited, keynote and plenary lectures** at conferences in chemistry, catalysis, and materials science (**>90 invited lectures**). **Selected lectures (2021-2025):**

2025/12 **Invited seminar**, **Iberian Energy Storage Research Centre (CIIAE)**, Cáceres (Spain).

2025/10 **Invited lecture**, Shining a Light on Biomedical and Energy Applications (SHIFT) International Meeting, La Laguna (Spain).

2025/10 **Invited seminar, ACS Science Talks** (in Spanish, online), American Chemical Society (YouTube video).

2025/09 **Invited lecture**, **International Society of Electrochemistry (ISE)** Annual Meeting, Mainz (Germany).

2025/08 **Invited seminar**, Chu Hall Seminar, **Lawrence Berkeley National Laboratory** (US).

2025/08 **Invited lecture, SUNCAT Summer Institute** on Catalysis for a Sustainable Future, **Stanford University** (US).

2025/06 **Plenary lecture, Nanoseries International Conference** 2025, Valencia (Spain).

2025/03 **Invited lecture, Materials for Sustainable Development (MATSUS)** Spring Meeting 2025, Sevilla (Spain).

2025/02 **Invited lecture**, **Catalyst Design Strategies for Photo- and Electrochemical Fuel Synthesis (ECAT)** Conference 2025, Madrid (Spain).

2024/09 **Invited lecture**, **LightChEC Summer School 2024**, Aegerisee (Switzerland).

2024/08 **Invited lecture**, **SurfCat Summer School 2024**, Kobæk Strand (Denmark).

2024/05 **Invited lecture**, **245th Electrochemical Society (ECS) Meeting**, San Francisco (US).

2023/09 **Keynote lecture**, **Annual Meeting of the Division of Electrochemistry of the Italian Chemical Society**, Cefalù (Italy).

2023/09 **Invited seminar,** Department of Chemistry and Chemical Engineering, **Eindhoven University of Technology,** Eindhoven (Netherlands).

2023/09 **Invited lecture, 74th Annual Meeting of the International Society of Electrochemistry (ISE),** Lyon (France).

2023/08 **Invited lecture,** Fall Meeting of the **American Chemical Society (ACS)**, San Francisco (US).

2023/07 **Keynote lecture**, **16th International conference on materials chemistry (MC16), Royal Society of Chemistry (RSC)**, Dublin (Ireland).

2023/03 **Invited lecture, Materials for Sustainable Development Conference** (MATSUS23), Electrocatalysis for sustainable fuels and chemicals symposium, Valencia (Spain).

2023/01 **Invited lecture,** Santo Tomás de Aquino ceremony, **University of Extremadura** (Spain).

2023/01 **Invited seminar**, Department of Physics, **Technical University of Denmark** (Denmark).

2022/11 **The 103rd ICREA Colloquium 'Renewable fuels: from science to technology and beyond'**, Barcelona (Spain).

2022/11 **Keynote lecture, Institute of Advanced Materials (INAM) Annual Symposium**, Castellón (Spain).

2022/10 **Invited lecture,** 90th Anniversary of the **"**Rockefeller" Physical Chemistry Institute, **Institute of Physical Chemistry "Rocasolano" (CSIC)**, Madrid (Spain).

2022/09 **Keynote lecture, International Society of Electrochemistry (ISE)** Annual Meeting.

2022/09 **Keynote lecture, International Symposium on Activation of Dioxygen & Homogeneous Oxidation Catalysis**, Girona (Spain).

2022/07 **Plenary lecture,** Annual Meeting of the **Electrochemistry Group of the Spanish Royal Society of Chemistry (RSEQ)**, Santander (Spain).

2022/06 **Invited lecture, Biennial RSEQ Meeting**, Granada (Spain).

2022/06 **Invited lecture,** DIPC School and Workshop on **Photo and ElectroCatalysis at the Atomic Scale (PECAS)**, San Sebastián-Donostia (Spain).

2022/06 **Invited lecture, Meeting of the Electrochemical Society (ECS)**, Vancouver (Canada).

2022/05 **Keynote lecture, Netherlands Catalysis & Chemistry Conference (NCCC)** (Netherlands).

2022/03 **Invited lecture**, Spring Meeting of the **American Chemical Society (ACS)**, San Diego (US).

2022/03 **Invited seminar, SUNCAT Center for Interface Science and Catalysis**, Stanford University and SLAC National Accelerator Laboratory (US).

2022/03 **Invited talk (online), Centre for Molecular Water Science**, Research Course 'Water in Energy Research and Technology', DESY Synchrotron (Germany).

2022/02 **Invited seminar** (online), Virginia Energy and Catalysis Club, **Virginia University** (US).

2022/02 **Invited seminar** (online), **McMaster University** (Canada).

2021/12 **Invited talk** (online), **Chemistry as Innovative Science (CHAINS) Conference 2021** (Annual Dutch Chemistry Conference).

2021/12 **Invited RICH seminar** (online), **Khalifa University**, Abu Dhabi (United Arab Emirates).

2021/11 **Invited seminar, Catalan Institute of Nanoscience and Nanotechnology (ICN2)**, Barcelona (Spain).

2021/11 **Invited talk** (online), **Lorentz Center workshop 'Electrifying Chemistry: from fundamentals to industrial applications'**, Leiden University (Netherlands).

2021/11 **Invited talk, nanoGe International Conference on Frontiers in Electrocatalytic Transformations** (INTERECT), Valencia (Spain).

2021/11 **Plenary lecture, 'Brain wars: the future is in your hands', RSEQ.**

2021/08 **Invited talk, 72nd Annual Meeting of the International Society of Electrochemistry** (ISE).

2021/07 **Invited talk, 41st Meeting of the Electrochemistry Group of the Spanish Royal Society of Chemistry and 1st French-Spanish Workshop on Electrochemistry.**

2021/07 **Invited seminar, Catalan Institute of Nanoscience and Nanotechnology**, ICN2 Barcelona (Spain).

2021/06 **Invited online seminar, Eindhoven Institute for Renewable Energy Systems** (EIRES), TU Eindhoven.

2021/05 **Plenary lecture, X Doctoral Workshop of the PhD Program in Chemistry, UAB** (Spain).

2021/05 **Invited talk,** "Jornada Científica de Jóvenes de la Red Sensores y Biosensores Electroquímicos (Electrobionet)".

2021/04 **Invited talk, 2021 Spring Meeting of the Materials Research Society** (MRS).

2021/03 **Keynote lecture, ELCOREL International Conference on Electrocatalysis for Renewable Energy** (online).

2021/02 **Invited talk**, Small Chem International Online Conference.

2021/02 **Invited talk**, online conference "II Fronteiras em Electroquímica e Electroanalitica" (Brazil).

2021/02 **Invited online seminar, ETH Zurich** (Switzerland).

2021/02 **Invited online seminar, University of Birmingham** (UK).

2021/01 **Invited online seminar, Electrochemical Society (ECS) Monterrey Student Chapter**.

2021/01 **Invited webinar, The Electrochemical Society (ECS)**.

Selected invited outreach activities

2025/12 **Invited outreach talk 'I Jornada de divulgación CIIAE-Sociedad'**, Cáceres (Spain).

2024/01 **Dialogue 'From Frontier Research to Knowledge: BIST Community ERC Grants'**, **BIST Forum 2024** (Barcelona Institute of Science and Technology), Barcelona (Spain).

2023/02 **Invited outreach talk 'Referentes Fundación Princesa de Girona'** for young students. Title: 'Futuro, ciencia y sostenibilidad', Espacio Joven Fudación Ibercaja, Zaragoza (Spain).

2021/07 **Dialogue with Nobel laureate Frances Arnold**, at the **Princess of Girona Foundation Award Ceremony**, Barcelona (Spain) (YouTube video)

2020/04 'Futuro, ciencia y sostenibilidad' online outreach talk for young people in Spain, organised by the Princess of Girona Foundation.

2019/12 **'Investigación y Química'** at '***El País con tu futuro 2019***' organised by 'El País' (Spanish newspaper) for ca. one thousand secondary school students, Madrid (Spain).

Publications in international scientific journals

76 peer-reviewed publications (40 as corresponding author), including **invited articles in *Nature Catalysis, ACS Energy Letters*, and *JACS Au*.**

*** Corresponding author**

2026

78. G.F. Costa, J.S. Barroso-Martínez, D.A.F. Silvestre, M. García-Melchor, **M. Escudero-Escribano***, "Time-resolved dynamics of nitrate electroreduction on silver" (2026), Preprint: *ChemRxiv*. DOI: 10.26434/chemrxiv-2025-v4rj1

77. A. Conte, S. Murcia-López, S. Bonacchi, S. Antonello, **M. Escudero-Escribano***, "Halide-directed nanostructuring of copper unraveled by multivariate analysis" (2026), Preprint: *ChemRxiv*.

76. J.B.V. Mygind, M. Rost, **M. Escudero-Escribano***, "The hidden complexities of electrochemically active surface area measurements" (2026), ***ACS Energy Letters***, accepted. ***Invited***.

2025

75. J.A. Arminio-Ravelo, S. Favero, **M. Escudero-Escribano***, "Why testing protocols matter in electrochemical methane oxidation: insights from IrO_x in acid" (2025), ***ACS Energy Letters****,10*, 4842. ***Invited***.

74. P. Sebastián-Pascual, A. Herzog, Y. Zhang, Y. Shao-Horn, **M. Escudero-Escribano***, "Electrolyte effects in proton-electron transfer reactions and implications for renewable fuels and chemicals synthesis" (2025), ***Nature Catalysis***, *8*, 986. ***Invited***.

73. J.S. Barroso-Martínez, **M. Escudero-Escribano***, “In situ elucidation of reaction mechanisms in electrocatalysis using scanning electrochemical microscopy” (2025), ***ChemCatChem***, *17*, e00352 accepted. **Front cover.** ***Invited***.

72. G.F. Costa, **M. Escudero-Escribano***, “Electrode-electrolyte engineering and in-situ spectroscopy for urea electrosynthesis from carbon dioxide and nitrate co-reduction” (2025), ***JACS Au***, *5*, 1538. ***Invited***.

2024

71. V. Pascual-Llorens, A. Serra-Ramos, P. Mazaira-Couce, **M. Escudero-Escribano**, P. Sebastián-Pascual, “Electrochemical surface nanostructuring of copper using fluoride and chloride” (2024), ***ChemElectroChem****, 11*, e202400414.

70. M.P. Salinas-Quezada, J.K. Pedersen, P. Sebastián-Pascual, I. Chorkendorff, K. Biswas, J. Rossmeisl, **M. Escudero-Escribano***, “Toward understanding CO oxidation on high-entropy alloy electrocatalysts” (2024), ***EES Catalysis****, 2,* 941. **Front cover.**

69. E. Plaza-Mayoral, V. Okatenko, K.N. Dalby, H. Falsig, I. Chorkendorff, P. Sebastián-Pascual, **M. Escudero-Escribano***, “Composition effects of electrodeposited CuAg nanostructured electrocatalysts for CO2 reduction” (2024), ***iScience*****,** *27*, 109933.

68. E. Plaza-Mayoral, K.N. Dalby, H. Falsig, I. Chorkendorff, P. Sebastián-Pascual, **M. Escudero-Escribano***, “Preparation of tunable Cu−Ag nanostructures by electrodeposition in a deep eutectic solvent” (2024), ***ChemElectroChem***, *11*, e202400094.

67. P. Mazaira-Couce, T.K. Madsen, E. Plaza-Mayoral, H.H. Kristoffersen, I. Chorkendorff, K.N. Dalby, W. van der Stam, J. Rossmeisl, **M. Escudero-Escribano***, P. Sebastián-Pascual, “Tailoring the facet distribution on copper with chloride” (2024), ***Chemical Science***, *15*, 1714.

2023

66. F.B. Holde, P. Sebastián-Pascual, K.N. Dalby, E. Gómez, **M. Escudero-Escribano***, “Nanostructured Ir-based electrocatalysts for oxygen evolution prepared by galvanic displacement of Co and Ni” (2023) ***Electrochimica Acta***, *467*, 143058.
Invited to special issue: “Electrochemistry-Powering a Healthier Planet”.

65. J. Quinson, T.M. Nielsen, **M. Escudero-Escribano**, K.M.Ø. Jensen, “Room temperature syntheses of surfactant-free gold nanoparticles: the benefits of mono-alcohols over polyols as reducing agents for electrocatalysis” (2023) ***Colloids and Surfaces A: Physicochemical and Engineering Aspects***, *675*, 131853.

64. J. Quinson, O. Aalling-Frederiksen, W. Dacayan, J. Bjerregaard, K. Jensen, M. Jorgensen, I. Kantor, D. Sorensen, L. Theil Kuhn, M. Johnson, **M. Escudero-Escribano**, S. Simonsen, K.M.Ø. Jensen, “Surfactant-free colloidal syntheses of gold-based nanomaterials in alkaline water and mono-alcohol mixtures” (2023) ***Chemistry of Materials***, *35*, 2173.

63. A.S. Petersen, K.D. Jensen, H. Wan, A. Bagger, I. Chorkendorff, I.E.L. Stephens, J. Rossmeisl, **M. Escudero-Escribano***, “Modelling anion poisoning during oxygen reduction on Pt near-surface alloys” (2023), ***ACS Catalysis***, *13*, 2735.

2022

62. A. Bagger, K.D. Jensen, M. Rashedi, R. Luo, J. Du, D. Zhang, I.J. Pereira, **M. Escudero-Escribano**, M. Arenz, J. Rossmeisl, “Correlations between experiments and simulations for formic acid oxidation” (2022), ***Chemical Science***, *13*, 13409.

61. E. Plaza-Mayoral, I.J. Pereira, K.N. Dalby, K.D. Jensen, I. Chorkendorff, H. Falsig, P. Sebastián-Pascual*, **M. Escudero-Escribano***, “Pd-Au nanostructured electrocatalysts with tunable compositions for formic acid oxidation” (2022), ***ACS Applied Energy Materials****, 5*, 10632.

60. I.E.L. Stephens, K. Chan, …, **M. Escudero-Escribano**, …, P. Sebastián-Pascual et al., “2022 roadmap on low-temperature electrochemical CO_2 reduction” (2022), ***J Phys Energy***, *4*, 042003.

59. Z. Lin*, **M. Escudero-Escribano***, J. Li*, "Recent progress and perspectives on single atom catalysts" (2022), ***Journal of Materials Chemistry A***, *10*, 5670. **Editorial**: themed collection 'Single-Atom Catalysis'.

58. M. Juelsholt, J. Quinson, E.T.S. Kjær, B. Wang, R. Pittkowski, S.R. Cooper, T.L. Kinnibrugh, S.B. Simonsen, L.T. Kuhn, **M. Escudero-Escribano**, K.M.Ø. Jensen, "Surfactant-free syntheses and pair distribution function analysis of osmium nanoparticles" (2022), ***Beilstein Journal of Nanotechnology***, *13*, 230.

57. K. Ehelebe, N. Schmitt, G.Sievers, A.W. Jensen, …, K.J.J. Mayrhofer, B. Etzold, N. Hodnik, **M. Escudero-Escribano**, M. Arenz, S. Cherevko, "Benchmarking fuel cell electrocatalysts using gas diffusion electrodes: inter-lab comparison and best practices" (2022), ***ACS Energy Letters***, *7*, 816.

56. P. Sebastián-Pascual, Y. Shao-Horn, **M. Escudero-Escribano***, "Toward understanding the role of the electric double layer structure and electrolyte effects on well-defined interfaces for electrocatalysis" (2022), ***Current Opinion in Electrochemistry***, *32*, 100918. ***Invited****.*

2021

55. M. Hatzell, **M. Escudero-Escribano***, J.R. Galán-Mascarós, "New strategies to tailor electrocatalytic properties" (2021), ***ACS Energy Letters***, *6*, 4413. **Invited** Energy Spotlight.

54. E. Plaza-Mayoral, P. Sebastián-Pascual, K.N. Dalby, K.D. Jensen, I. Chorkendorff, H. Falsig, **M. Escudero-Escribano***, "Preparation of high surface area Cu-Au bimetallic nanostructured materials by co-electrodeposition in a deep eutectic solvent" (2021), ***Electrochimica Acta****, 896,* 115446. ***Invited***.

53. P. Sebastián-Pascual, **M. Escudero-Escribano***, "Surface characterisation of Cu electrocatalysts by lead underpotential deposition" (2021), ***Journal of Electroanalytical Chemistry****, 896*, 115446. ***Invited****.*

52. J.A. Arminio-Ravelo, **M. Escudero-Escribano***, "Strategies toward the sustainable electrochemical oxidation of methane to methanol" (2021), ***Current Opinion in Green and Sustainable Chemistry****, 30,* 100489. ***Invited****.*

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9. C. Vaz-Domínguez, **M. Escudero-Escribano**, A. Cuesta, F. Prieto-Dapena, C. Cerrillos, M. Rueda, "Electrochemical STM study of the adsorption of adenine on Au(111) electrodes" (2013) ***Electrochemical Communications***, *35*, 61.

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7. **M. Escudero-Escribano**, A. Verdaguer-Casadevall, P. Malacrida, U. Grønbjerg, B. P. Knudsen, A. K. Jepsen, J. Rossmeisl, I.E.L. Stephens, I. Chorkendorff, "Pt_5Gd as a highly active and stable catalyst for oxygen electroreduction" (2012) ***Journal of the American Chemical Society***, *134*, 16476.

6. **M. Escudero-Escribano**, G. J. Soldano, P. Quaino, W. Schmickler, M. E. Zoloff-Michoff, E. P. M. Leiva, A. Cuesta, "Cyanide-modified Pt(111): structure, stability and hydrogen adsorption" (2012) ***Electrochimica Acta***, *82*, 524.

5. **M. Escudero-Escribano**, M. E. Zoloff-Michoff, E. P. M. Leiva, N. M. Markovic, C. Gutiérrez, A. Cuesta, "Quantitative study of non-covalent interactions at the electrode-electrolyte interface using cyanide-modified Pt(111) electrodes" (2011) ***ChemPhysChem***, *12*, 2230.

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3. **M. Escudero**, J. F. Marco, A. Cuesta, "Surface decoration at the atomic scale using a molecular pattern" (2009), ***Journal of Physical Chemistry C***, *113*, 12340.

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Patents and patent applications

- I. E.L. Stephens, **M. Escudero-Escribano**, A. Verdaguer-Casadevall, P. Malacrida, U. Grønbjerg, B. P. Knudsen, A. K. Jepsen, J. Rossmeisl, I. Chorkendorff, "Platinum and palladium alloys suitable as fuel cell electrodes", WO 2014005599, published, **2014**.
- I. E.L. Stephens, **M. Escudero-Escribano**, A. Verdaguer-Casadevall, P. Malacrida, U. Grønbjerg, J. Schiotz, J. Rossmeisl, I. Chorkendorff, "Platinum and palladium alloys suitable as fuel cell electrodes", WO 2014079462, published, **2014**.
- I. E.L. Stephens, A. Verdaguer-Casadevall, B. Wickman, P. Malacrida, S. Siahrostami, **M. Escudero-Escribano**, M. Karamad, J. Rossmeisl, I. Chorkendorff, "Catalysts for electrochemical synthesis of hydrogen peroxide", WO 2014174065, published, **2014**.

Supervision and mentoring

Group size: 8 postdoctoral/senior researchers (including 3 Marie Sklodowska Curie Actions (MSCA) Fellows and 2 "Ramón y Cajal" (RyC) Researchers) **+ 6 PhD students** + **1 research assistant** (Jan 2026)

- **Currently supervising eight postdoctoral/senior researchers at ICN2**: Gabriel Floriano Costa, Silvia Favero (MSCA Fellow), Camilo Mesa (RyC Researcher), Sanchayita Mukhopadhyay, Sebastián Murcia (RyC Researcher), Jon Bjarke Mygind (Carlsberg Fellow), Abigail Seddon (MSCA Fellow) and Manila Ozhukil Valappil (MSCA Fellow).
- **Currently supervising five PhD students (ICN2)**: Jaxiry Barroso-Martínez (2023-2027), Grega Venturini (2023-2027), Nathalie Hermans (2023-2027), Gabriele Cioli (2024-2028), and Niccolò Paoletti (2025-2029)) at ICN2 and **co-supervising one PhD student (CAPeX)**: Gustav Hedemark (2025-2028).
- **Finalised supervision of eight postdoctoral researchers, eight PhD students and over 10 MSc and BSc students** to completion.

Selected editorial activities

2024 –	**Editorial Advisory Board Member of *ACS Electrochemistry*.**
2023 –	**Associate Editor of *PRX Energy*** (American Physical Society).
2023 –	**Editorial Advisory Board Member of *ChemPhysChem*.**
2022 –	**Editorial Board Member of *PRX Energy*.**
2022 –	**Editorial Advisory Board Member of *ACS Catalysis*.**
2022 –	**Editorial Advisory Board Member of *ACS Energy Letters*.**
2022	**Guest Editor** of special issues for various journals including *Journal of Materials Chemistry A*, *Journal of Physics: Energy*, *iScience*, and *Electrochemical Science Advances*.
2021 –	**Editorial Board Member of *ChemElectroChem*.**
2020 – 2023	**Editorial Board Member of *Communications Chemistry*** (Nature Research).
2019	**Guest Editor** of a special issue for *ChemPhysChem.*
2018 – 2019	**Early Career Advisory Board Member of *ACS Catalysis*.**

Memberships of scientific and evaluation committees

2024-present	Elected member of the **Scientific Advisory Committee** of the **Spanish National Research Council** (Consejo Superior de Investigaciones Científicas, **CSIC**).
2018-present	**Member of >20 PhD evaluation committees** at Delft University of Technology, (Netherlands); Technical University of Denmark; University of Barcelona (Spain); University of Cantabria (Spain); Technical University of Berlin (Germany); Eindhoven Technical University, (Netherlands); University of Nova Gorica (Slovenia); Swiss Federal Institute of Technology Lausanne, EPFL (Switzerland); Collège de France; University of Cordoba (Spain); University of Alicante (Spain).

Memberships of scientific societies

- 2023-present: **International Society of Electrochemistry (ISE) Regional Representative for Spain.**
- 2023-present: **Member of the Royal Society of Chemistry (RSC).**
- 2022-present: **Elected Member of the Young Academy of Spain.**
- 2021-2022: **International Society of Electrochemistry Regional Representative for Denmark.**
- 2018-2021: **Chair of the Danish Electrochemical Society.**
- 2017-2022: **Board Member** of the Danish Electrochemical Society.
- 2017-present: **Member of the American Chemical Society (ACS)**. Member of the Divisions of Catalysis Science and Technology and Energy and Fuels since 2019.
- 2015-present: **Elected Member of AcademiaNet** – Expert Database for Outstanding Female Academics, nominated by the Danish National Research Foundation (only by nomination).
- 2014-present: **Member of the Electrochemical Society (ECS)**.
- 2011-present: **Member of the Spanish Royal Society of Chemistry (RSEQ)**, the Group of Electrochemistry of the RSEQ and the Group of Young Chemistry Researchers of the RSEQ.
- 2009-present: **Member of the International Society of Electrochemistry (ISE).**