

Simone EIZAGIRRE BARKER

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Gonville and Caius College, Trinity Street, CB2 1TA, Cambridge, United Kingdom

EDUCATION

- PhD in Experimental Physics** Oct. 2020 – present
Cavendish Laboratory, University of Cambridge
Cambridge, UK
Thesis topic: *Optically addressable single electronic spins in a 2D material at room temperature.*
Supervisor: Prof. Mete Atatüre.
- Master of Research in Nanoscience and Nanotechnology, Distinction** Oct. 2019 – Oct. 2020
EPSRC Nanotechnology Doctoral Training Centre, University of Cambridge
Cambridge, UK
- Master of Chemical Physics with Honours, First Class** Sep. 2014 – Jun. 2019
School of Chemistry, University of Edinburgh
Edinburgh, UK

RESEARCH EXPERIENCE

- Eindhoven University of Technology/DIFFER** Aug. 2017 – Aug. 2018
Undergraduate Research Student
Eindhoven, The Netherlands
Full-year placement in the group of Prof. Jaime Gómez Rivas investigating photonics of 2D semiconductors, focusing on exciton dynamics in transition metal dichalcogenides. This work led to publications in *ACS Photonics* and *Advanced Optical Materials*.
- Basque Centre for Materials, Nanostructures and Applications** Jun. – Jul. 2016
Erasmus+ Summer Research Intern
Derio, Spain
Two-month summer project studying the morphological and electrochemical properties of polymer-ionic liquid composite membranes. This work has since been published in *Materials & Design*.
- Polymat Centre for Macromolecular Design and Engineering** Summers of 2013-2015
Summer Research Intern
Donostia, Spain
Summer intern for three years, investigating polymerisation reaction mechanisms and kinetics through experimental and computational studies. My results contributed to an article in *Langmuir*.

PUBLICATIONS

- [8] **A quantum coherent spin in a two-dimensional material at room temperature**
H Stern, CM Gilardoni, Q Gu, S Eizagirre Barker, O Powell, X Deng, L Follet, C Li, A Ramsey, HH Tan, I Aharonovich, M Atatüre.
arxiv:2306.1302, 2023.
- [7] **Room-temperature optically detected magnetic resonance from single defects in hexagonal boron nitride.**
H Stern, J Jarman, Q Gu, S Eizagirre Barker, N Mendelson, D Chugh, S Schott, HH Tan, H Siringhaus, I Aharonovich, M Atatüre.
Nature Communications, 2022 (arXiv:2103.16494).
- [6] **Tuning the optical bandgap and piezoresistance in iridium-based molecular semiconductors through ligand modification.**
S Eizagirre Barker, H Benjamin, CA Morrison, S Afanasjevs, GS Nichol, S Moggach, K Kamenev, N Robertson.
Materials Advances, 2021 (open-access).
- [5] **A modular, dynamic, DNA-based platform for regulating cargo distribution and transport between lipid domains.**
R Rubio-Sánchez, S Eizagirre Barker, Michal Walczak, Pietro Cicuta, Lorenzo di Michele.
Nano Letters, 2021 (biorXiv:2021.03.02.433457).
- [4] **Preserving the emission lifetime and efficiency of a monolayer semiconductor upon transfer.**
S Eizagirre Barker, S Wang, RH Godiksen, GW Castellanos, M Berghuis, TV Raziman, AG Curto, J Gómez Rivas. *Advanced Optical Materials*, 2019 (open-access).
- [3] **Limits to strong coupling of excitons in multilayer tungsten diselenide with collective plasmonic resonances.**
S Wang, Q Le-Van, F Vaianella, B Maes, S Eizagirre Barker, RH Godiksen, AG Curto, J Gómez Rivas.
ACS Photonics, 2019 (arXiv:1808.08388).
- [2] **Ionic liquids for the control of the morphology in poly (vinylidene fluoride-co-hexafluoropropylene) membranes.**
PG Saiz, AC Lopes, S Eizagirre Barker, RF de Luis, MI Arriortua.
Materials & Design, 2018 (open-access).
- [1] **Surfactant kinetics and their importance in nucleation events in (mini)emulsion polymerization revealed by quartz crystal microbalance with dissipation monitoring.**
N Ballard, J Urrutia, S Eizagirre, T Schäfer, G Diaconu, JC de la Cal, JM Asua.
Langmuir, 2014.

CONFERENCES AND TALKS

- [9] **University of the Basque Country UPV-EHU, 2023**, invited talk: *Optically addressable electronic spin resonances in a 2D material*
- [8] **Spanish Researchers in the UK Symposium, 2023**, talk: *Brilliant imperfections: quantum light from defects in crystals*
- [7] **Inaugural Workshop on Boron Nitride 2023**, poster: *A new optically addressable electronic spin resonance in hBN*
- [6] **Optica Innovation School 2022**, best pitch presentation award
- [5] **SPIE Photonics West 2022**, talk: *Optically-addressable spins in hexagonal boron nitride at room temperature*
- [4] **SPIE Photonics West 2022**, poster: *Towards a 2D single spin-photon interface at room temperature*
- [3] **Cavendish Graduate Student Conference 2021**, talk: *Towards a room-temperature spin qubit in a 2D material*
- [2] **Materials Research Society Fall Meeting 2021**, poster: *Towards a 2D single spin-photon interface at room temperature.*
- [1] **Strong Coupling with Organic Molecules Workshop 2018**, poster: *Exciton dynamics in 2D transition metal dichalcogenides*

TEACHING, DEMONSTRATING AND SUPERVISIONS

Semiconductor Engineering, supervisions for Engineering Tripos IIA, University of Cambridge <i>Tutorial-style teaching covering basics of semiconductor physics and devices for 3rd year undergraduates.</i>	Oct. 2021 - Jan. 2022
Introduction to Optical Microscopy, practical for Nanotechnology MRes, University of Cambridge <i>Designed and delivered three-hour experimental microscopy workshops to Master's students.</i>	Oct. 2021
Physics at the Nanometre Scale, supervisions for Nanotechnology MRes, University of Cambridge <i>Led tutorial-style workshops for Master's students to revise course material.</i>	Mar. - Apr. 2021

AWARDS, GRANTS AND PRIZES

- SPIE D.J. Lovell Scholarship**, *The International Society for Optics and Photonics (SPIE)*, 2021
- Edinburgh Award for Chemical Physics Student Leaders**, *University of Edinburgh*, 2017
- Principal's Go Abroad Fund**, *University of Edinburgh*, 2017
- Erasmus+ Traineeship Grant**, *European Commission, University of Edinburgh*, 2016, 2017-18

SCIENCE JOURNALISM AND OUTREACH

Euskadi Irratia (Basque Public Radio) <i>Fortnightly guest on morning radio talkshow, Faktoria</i>	2023 – present
Cavendish Laboratory's "People Doing Physics" Podcast <i>Editorial team member and podcast host</i>	2022 – present
Cambridge University Science Improv <i>Actor</i>	2020 – present
Freelance <i>Contributing author at Massive Science, Chemistry World, Elhuyar Aldizkaria</i>	2019 – 2021
Cambridge Journal of Science & Policy <i>Editor</i>	2020
Cambridge University Science Magazine (BlueSci) <i>Podcast host & producer, copy-editor, contributing author</i>	2020 – 2021
IEEE Photonics Society <i>Outreach volunteer for Iluminando el Futuro: Iniciativa STEM</i>	Jan. – Feb. 2021
Edinburgh University Science Magazine (EUSci) <i>Editor-in-Chief (2018-19), Head Copy-Editor (2017-18), Deputy Editor (2016-17), contributing author</i>	2014 – 2019

EXTRA-CURRICULAR ACTIVITIES AND SOCIETIES

- Cavendish Inspiring Womxn**, Secretary, 2021-22
- Cambridge University Science & Policy Exchange**, Forum conference organiser, 2019-21

SKILLS

- Languages:** Native fluency in Basque, English and Spanish. High level of spoken and written French.
- Programming:** Working knowledge of basic programming for data analysis and experimental control with Python (including Qudi, pyserial), Jupyter, and MatLab, as well as version control in GitHub. Proficient in data analysis with OriginLab and word processing with LaTeX and Overleaf.