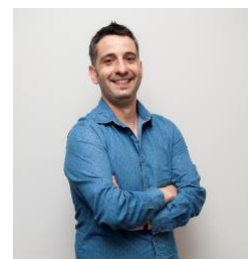


SECTION B. CURRICULUM VITAE

PERSONAL INFORMATION

Family name, First name: SARDON, HARITZ
 Researcher unique identifier(s): Research ID C-4044-2015; ORCID: 0000-0002-6268-0916
 Date of birth: 21 July, 1982
 Nationality: Spanish
 URL for web site: <https://www.haritzsardonlab.com/>
 Google Scholar profile URL: <https://scholar.google.com/citations?user=aob7va4AAAAJ&hl=es>
 Personal Information: Married, 2 Children (5 and 2 years old)



EDUCATION

2011 **PhD**, Macromolecules Department, Chemistry Faculty, University of the Basque Country (UPV/EHU), Spain. Thesis title: "Optimisation of Organic-Inorganic Interphase in Hybrid Systems based on Waterborne Polyurethanes and Silica Nanostucture". PhD Supervisors: Prof. Irusta and Prof. Berridi.*
**Due to paternity leave the deadline has been extended and I can participate in the current ERC consolidator call*
 2008 **Masters**, Macromolecules Department, Chemistry Faculty, University of the Basque Country (UPV/EHU), Spain.

CURRENT POSITION(S)

Since 2021 **Associate Professor**, Macromolecules Department, Chemistry Faculty, University of the Basque Country (UPV/EHU), Spain.
 Since 2020 **Group Leader**, Catalysis and Sustainable Polymers Group, Basque Excellence Centre for Polymeric Materials POLYMAT, Spain.

PREVIOUS POSITIONS

2018 – 2021 **Assistant Professor**, Macromolecules Department, Chemistry Faculty, University of the Basque Country (UPV/EHU), Spain.
 2015 – 2020 **Junior Group Leader**, Innovative Polymers Group, Basque Excellence Centre for Polymeric Materials, POLYMAT, Spain.
 2012 – 2015 **Postdoctoral-Scientist**, Advanced Organic Materials, IBM-Almaden Research Center, CA, USA.

FELLOWSHIPS GRANTS AND AWARDS

2021 **ACS Macro Letters/Biomacromolecules/Macromolecules Young Investigator Award**, American Chemical Society (ACS).
 2021 **Young Investigator Award**, Group Leader Category, Spanish Chemistry Royal Society.
 2020 **Young Polymer Chemist Investigator Award**, Spanish Polymer Chemistry Royal Society
 2020 **BBVA Award as young creative investigator**. One of the 4 selected candidates in the area of chemistry from among >100 applicants.
 2017 **Ikerbasque Research Fellow**, Ikerbasque Science Foundation. One of the 15 selected candidates from among >400 applicants.
 2016 **Juan de la Cierva Award**, Spanish Ministry. Selected from around 200 candidates.
 2012 **Postdoctoral Scholarship**, Basque Government, IBM Almaden Research Center, USA.

EXTERNAL RESEARCH FUNDING (from 2015 either PI, co-PI or main partner)

- I have obtained funding in highly competitive calls at the national level (PID2022-138199NB-I00 and MAT2017-83373-R) and European level (in H2020, POLINA-PATHFINED (400,000€) NATURE-EID (550,000€; Coordinator); NIPU-ETN-2020 (500,000€) VITRIMAT ETN-2019 (500,000€), and 4D-BIOGEL-IF-2018 (250,000€). I also obtained funding and coordinated the first European Joint doctorate of the University of Basque Country, SUSPOL-ITN-2015 (850,000€).
- Within the private sector, I obtained 1,000,000€ as Principal Investigator for developing sustainable polymers from adhesives, thermoplastics, thermosets and elastomers.

CURRENT TEAM

- I currently lead a multidisciplinary group working at the interface between polymer chemistry, catalysis, material science and sustainable chemistry of around 20 people including 4 post-docs, 15 PhD and 2 master students. The RIDE-CoG will allow me to consolidate my research group and become one of the key players in the field of sustainable additive manufacturing.

TEACHING ACTIVITIES

Since 2018 **Lecturer BSc level**. Year 1 Experimentation methods in chemistry; Year 2 Physical Chemistry I; Year

3 Spectrophotometric Identification of Organic Compounds

Since 2018 **Lecturer MSc level.** Advance Polymer Synthesis

2016-2018 **Lecturer BSc level.** Year 2 Organic Chemistry I; Year 3 Organic Chemistry II

2016-2018 **Lecturer MSc level.** Spectroscopic identification of Macromolecules

ORGANISATION OF SCIENTIFIC MEETINGS

2021 Chair of the 10th European Polymer Federation summer School in Circular Plastic Economy.

2020 Co-organiser of the GEP-SLAP 2020 (300 participants).

2018 Chair of the 6th ECNP Young Polymer Scientists Conference (80 participants).

2018 Co-organiser of the 10th ECNP conference (150 participants).

2015 Co-organiser of the first French-Spanish Joint Congress for Young Researchers in Polymers (90 participants).

EDITORIAL BOARD MEMBERSHIPS AND COMMISSIONS OF TRUST

2023 **Editorial Board Member**, Chemical Science.

2020 **Editorial Board Member**, Macromolecules.

2020 **Young Editorial Board Member**, ACS Sustainable Chemistry and Engineering.

2020 **Panel Member** in Spanish National Grants in the area of Materials.

2020 **Scientific Advisor** of POLYKEY start-up.

2019 **Invited guest editor for RSC Journal Polymer Chemistry** "Circular Economy of Polymers".

2017 **Invited guest editor for European Polymer Journal** "Organocatalysed Polymerisations".

2016 **External Reviewer** for PhD Theses (University of Pau, University of Mons, Toulouse and UPC).

2015 **Invited external expert reviewer** for ANR (France), MAT (Spain), FWO (Belgium) and SNF (Switzerland).

PEER REVIEW (since 2012)

Regularly invited to review papers for numerous journals including, Nature, Science, Nature Chemistry, Nature Communication, Green Chemistry; Macromolecules; ACS Sustainable, Chemical Science, JACS; Angew. Chem., Biomacromolecules; ACS Macro Letters; Polymer Chemistry

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2023 Fellow of the **Royal Society of Chemistry** (RSC)

2012 Member of the **American Chemical Society** (ACS)

2006 Member of the **Spanish Royal Society of Chemistry and Polymer Chemistry** (RSEQ)

OUTREACH AND DISSEMINATION

I actively participate in disseminating science in schools about the sustainability of plastics, chemical recycling and additive manufacturing, which will be part of the RIDE-CoG. I participate every year in "the science week" and actively in events organised in the "Pint of Science" in San Sebastian. Furthermore, we disseminate science to the public using the "Mapping Ignorance" platform, where cutting-edge scientific research is translated into an educated lay-person language (<https://mappingignorance.org/>). We also try to discuss general topics in newspaper or radio programmes such as Norteko Ferrokarrila in Euskadi Irratia. For instance, one of my articles about fully recyclable plastics was covered by several mass media, local and national including *Diario Vasco*, *Las Noticias de Gipuzkoa*, *El País* or *El Mundo*.

MAJOR COLLABORATIONS

2020 **Prof. Steven De Meester**, Gent University; Process of chemical recycling (1 joint PhD student).

2020 **Prof. Fernando López Gallego**, Biomagune, Spain; Biocatalysis, multi enzyme systems for advanced materials (2 joint submitted grants).

2018 **Prof. Timothy Long**, Arizona State University, USA; New processes for sustainable additive manufacturing (2 joint PhD students, 1 joint publication).

2017 **Prof. Christophe Detrembleur**, Belgium, Non-isocyanate Polyurethanes and Sustainable Polymer Preparation (2 joint PhD students, 5 joint publications).

2016 **Prof. Eugene Chen**, University of Colorado, USA; Recyclable Polymers for packaging applications (2 joint publications, 2 under preparation).

2016 **Prof. Alejandro Müller & Prof. David Mecerreyes**, POLYMAT, Spain, Batteries and Polymer Characterisation (2 joint PhD students, >30 joint Publications + 2 patents)

2015 **Prof. Andrew Dove**, University of Birmingham, UK; Organocatalysed depolymerisation of commodity polymers (2 joint PhD students, 8 joint publications).

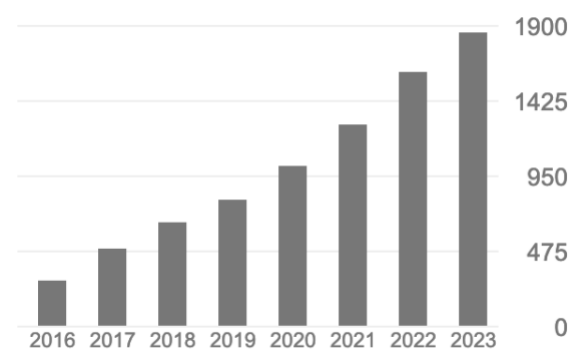
RESEARCH ACHIEVEMENTS SUMMARY

During my career I have several scientific achievements. My PhD research focused on improving the compatibility between polyurethanes and silica in waterborne polyurethanes, where I found that the addition of alkoxysilanes had a major impact on the final properties (Polymer 2010). During my postdoc at the IBM-Almaden Research Center, I demonstrated that organic acids could be employed to catalyse the preparation of polyurethanes (JACS 2013) and that broad-spectrum antimicrobial polycarbonate hydrogels could be designed with rapid degradability (Biomacromolecules 2015). **As an independent researcher, my focus has been on designing the plastics of the future, by implementing scalable and environmentally benign plastic-recycling approaches and designing new polymers considering their end-of-life assessment.** We have developed non-isocyanate polyurethanes that can be prepared in aqueous media using unique, 8-membered cyclic carbonates (Polym. Chem. 2016), thermally stable organocatalysts to favour the transition of organocatalysis from lab to market using acid-base mixtures (Green Chem. 2018) and the design of plastics with full chemical recyclability and good barrier properties (Nat. Comm. 2019). Most recently, my team managed to exploit the high thermal stability and the exquisite control of organocatalysis to show the first example of the selective chemical recycling of plastics (Angew. Chem. 2021), now exploited in the POLYKEY start-up (<https://polykey.eu/>) company, of which I was a promotor.

My team now has a focus on the area of light-mediated additive manufacturing (VP AM). In particular, we have been exploiting the use of abundant biomass to obtain materials with excellent performance. Moreover, we have attempted to implement radical-free chemistries in AM. To do so **we have developed new photoacid and photobase generators and we design new inks based on nucleophilic/electrophilic substitution to extend the end of life of current AM objects and to facilitate their reutilization and recycling.**

My international standing and the high regard in which my research is held are evidenced by the large number of feature articles and reviews that I have published, including a review article in Nature "Critical advances and future opportunities in upcycling commodity polymers" Nature 2022, 603, pages 803–814 and a review in Chemistry of Materials "Sustainable Materials and Chemical Processes for Additive Manufacturing" Chem Mat., 2020, 32, 7105-7119 and one in Angew. Chem.

"Recent Advances and Challenges in the Design of Organic Photoacid and Photobase Generators for Polymerizations" Angew. Chem. 58 (31), 10410-10422. These reviews cover three of the most important aspects of the proposal, related to circularity, photobase generators and recycling.



TEN REPRESENTATIVE PUBLICATIONS IN THE AREA OF AM, RECYCLING AND PHOTOCATALYSIS

I have participated in more than 175 peer-reviewed publications (<http://www.researcherid.com/rid/C-4044-2015>), with more than 100 as the corresponding author. Most of these peer-reviewed articles (> 100), have been published in the last 5 years (2018-2023) and are in journals in the Q1 (90%). The impact of my work can be measured by the increasing number of citations (more than 1900 in 2023) that my publications have received. My current h-index is 51.

- 1 Recyclable photoresins for light-mediated additive manufacturing towards Loop 3D printing Xavier Lopez de Pariza, Oihane Varela, Samantha O Catt, Timothy E Long, Eva Blasco, Haritz Sardon, (Nature, communication 2023, 9,7) **First example describing an approach that enables the printing of a resin that is amenable to re-printing with retained properties and appearance.**
- 2 Exploiting the Use of the Decarboxylative S-Alkylation Reaction to Produce Self-Blowing, Recyclable Polycarbonate Foams Tansu Abbasoglu, Diego Ciardi, Francois Tournilhac, Lourdes Irusta, Haritz Sardon, Angewandte Chemie 2023, 62, e202308339 **Successful example of a fully recyclable self-blown foam based on polycarbonates**
- 3 Thermally Reversible Organocatalyst for the Accelerated Reprocessing of Dynamic Networks with Creep Resistance ACS Macro Letters 2023, 12, 11, 1536–1542 **Successful example of a thermally reversible catalyst that allow the multiple reprocessing of dynamic networks**
- 4 Covalent Adaptable Networks through Dynamic N,S-Acetal Chemistry: Toward Recyclable CO₂-Based Thermosets Thomas Habets, Guillem Seychal, Marco Caliori, Jean-Marie Raquez, Haritz Sardon, Bruno Grignard, Christophe Detrembleur, JACS J. Am. Chem. Soc. 2023, 145, 46, 25450–25462 **Successful example of cationic polymerization of a thermoplastic material with strong mechanical properties and recyclability**
- 5 From plastic waste to polymer electrolytes for batteries through chemical upcycling of polycarbonate Keita Saito, Coralie Jehanno, Leire Meabe, Jorge L. Olmedo-Martínez, David Mecerreyes, Kazuki Fukushima and Haritz Sardon, J. Mater. Chem. A, 2020,8, 13921-13926 **Example of Chemical upcycling to batteries**
- 6 3D-printed bioplastics with shape-memory behavior based on native bovine serum albumin, Eva Sanchez-Rexach, Patrick T Smith, Alvaro Gomez-Lopez, Maxence Fernandez, Aitziber L Cortajarena, Haritz Sardon,

Alshakim Nelson, ACS Appl. Mater. Interfaces 2021, 13, 16, 19193–19199 **Discovery that native BSA could be directly photo printed taking advantage of the Michael addition reaction**

- 7 Selective chemical upcycling of mixed plastics guided by a thermally stable organocatalyst. Coralie Jehanno, Jeremy Demarteau, Daniele Mantione, Chiara Arno, Fernando Ruiperez, James Hedrick, Andrew Dove, Haritz Sardon, Angewandte Chemie 2021, 60, 6710-6717 **Successful example of chemical sorting of plastics**
- 8 Packaging materials with desired mechanical and barrier properties and full chemical recyclability Ainara Sangroniz, Jian-Bo Zhu, Xiaoyan Tang, Agustin Etxeberria, Eugene Y.-X. Chen, Haritz Sardon, Nat. Comm. 2019, 10, 3559 **First example of Fully recyclable plastics with good barrier properties**
- 9 Packaging materials with desired mechanical and barrier properties and full chemical recyclability Ainara Sangroniz, Jian-Bo Zhu, Xiaoyan Tang, Agustin Etxeberria, Eugene Y.-X. Chen, Haritz Sardon, Nat. Comm. 2019, 10, 3559 **First example of Fully recyclable plastics with good barrier properties**
- 10 Organic Acid-Catalysed Polyurethane Formation via a Dual-Activated Mechanism: Unexpected Preference of N-Activation over O-Activation of Isocyanates. Sardon H., Engler A.C., Chan J.M., García J.M., Coady D.J., Pascual A., Mecerreyes D., Jones G.O., Rice J.E., Horn H.W., & Hedrick J.L. J. Am. Chem. Soc. 2013, 135, 16235–16241 [IF=14.7; Citations=86] **Understanding the impact of acid catalysis in the preparation of polyurethanes**

BOOKS AND BOOK CHAPTERS

- 1 Edited "Organic Catalysis for Polymerisation" RSC, by Sardon H., Naumann S., Dove A.P. 2018
- 2 Organic Catalysis for Polymerisation, Sardon H. Organocatalysed Step-Growth Polymerisations, 2018, Chapter 12, pages 531-583
- 3 How Smart are the Polymers? NOVA Science Publisher, Sardon H. Intrinsically Healable Polymers, 2018, Chapter 4, 95-122
- 4 Applications of Ionic Liquids in Polymer Science and Technology, Sardon H. Ionic Liquids and Cellulose Technologies: Dissolution, Modification and Composite Preparation", 2014, Chapter 7, 135-152

PATENTS (Related to the proposal)

- 1 Depolymerization of PET at low temperature, H.Sardon, I. Olazabal, C. Jehanno PCT/EP2023/077851
- 2 Systems and Methods for selective shape transformation of 3D-printed Materials H.Sardon, A. Nelson, E. Sanchez-Rexac et al. PCT/US2023/029568
- 3 Protein-based composition for additive manufacturing PCT/US2021/064530
- 4 Low temperature synthesis of carbonyl-containing cyclic molecules by depolymerization of Bisphenol A-based polycarbonate, 2021, I. Olazabal, C. Jehanno, D. Mecerreyes, H. Sardon, Spanish patent P20309EP00
- 5 **Promotor of the Spin-off POLYKEY devoted to the application of circular economy concepts to the design of new functional polymers (2020)**

INVITED PRESENTATIONS (selection)

I have been invited to deliver more than 30 lectures at international conferences (12) and universities (10), including Soochow, Birmingham, Bordeaux, as well as by companies such as IBM, Oribay or BASF.

- Bordeaux Polymer Conference, Bordeaux, 2022 (Invited)
- ACS Macro Letters/Biomacromolecules/Macromolecules Young Investigator Award symposium in honor of Haritz Sardon and Bradley Olsen, 2021 (Invited)
- 28th European Polymer Federation Intercongress Workshop, Online 2021 (Invited)
- 16th Pacific Polymer Chem, Singapore, 2019 (Invited)
- 1st Organocatalysed Polymerisation Conference" Brussels, Belgium 2016 (Invited)
- 1st JIP-JEPO French Spanish Young Polymer Conference, San Sebastian, Spain 2016 (Plenary)

SCIENTIFIC RECOGNITION

I have been invited to participate in several virtual issues devoted to Young Investigators including Polymer Chemistry and Chem Comm Young Investigator Special Issue in 2021 and the Virtual Issue of 2020 Class of Influential Researchers in I&EC Research