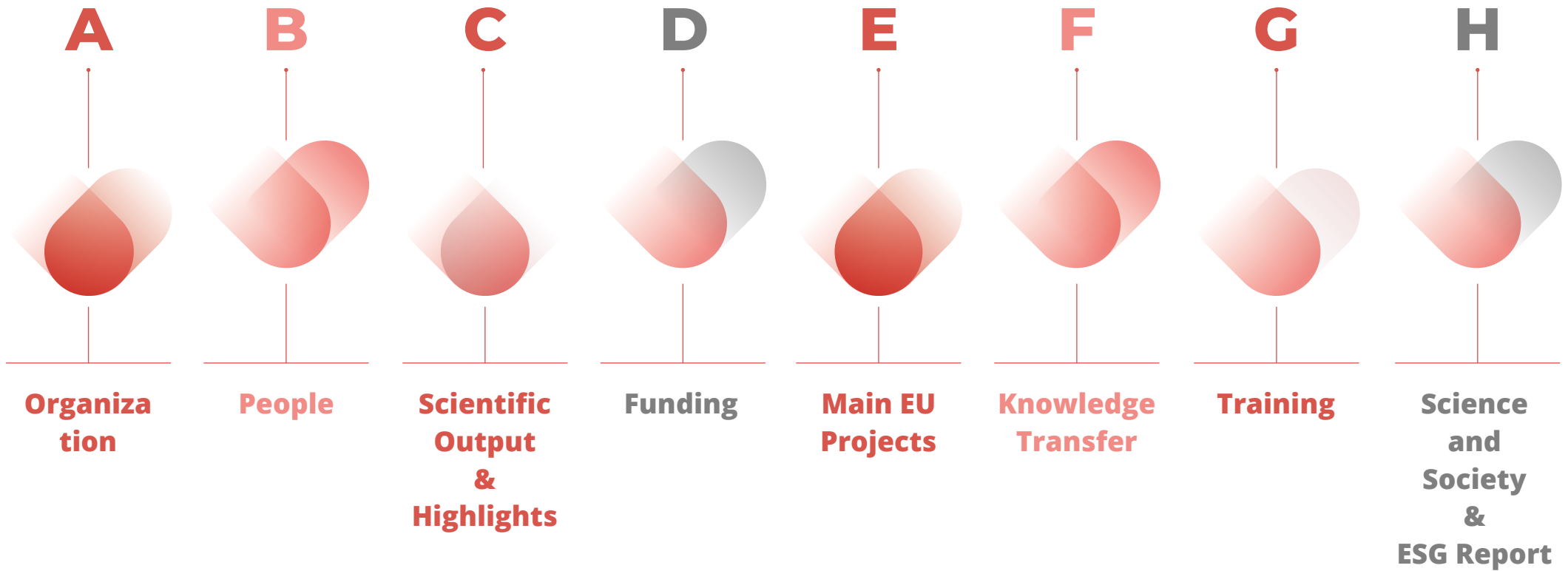


POLYMAT

ACTIVITY
REPORT
2025



CONTENTS



ORGANIZATION

MISSION & VISION

Our mission is to advance use-inspired fundamental research in polymer synthesis and processing, addressing key challenges in energy, healthcare and sustainability through scientific excellence and innovation.

Our vision is to be recognized for leadership in polymer science worldwide, to strengthen the Basque Science System, and to generate meaningful societal impact.

GOVERNMENT BOARD





215 PEOPLE

48%

52%

WOMEN

MEN

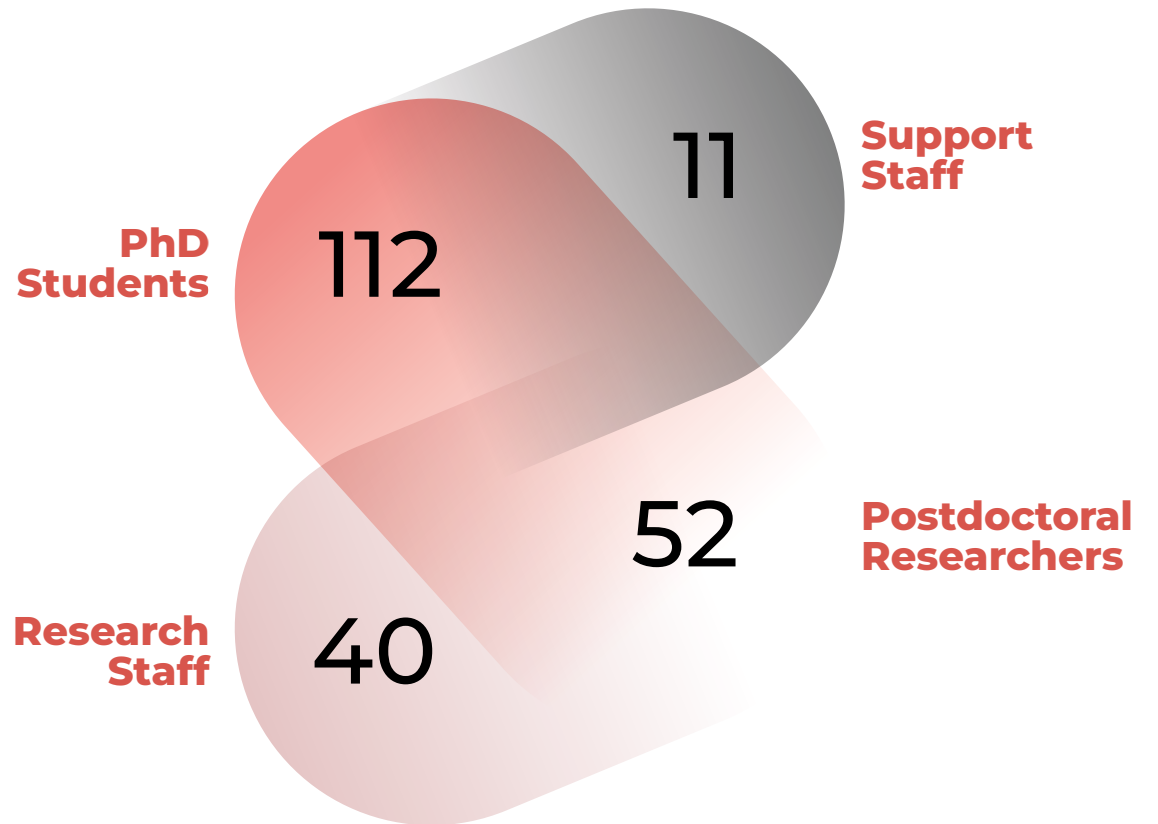


HR EXCELLENCE IN RESEARCH

PEOPLE

+32

NATIONALITIES



**Ten POLYMAT researchers
recognized among the
World's Top 2% Scientists
by the Stanford's List.**

SCIENTIFIC OUTPUT

203 ARTICLES

11283 Citations

Q1 articles

184

C1 articles

19

106

D1 articles

Master
Thesis

19

24

PhD
Thesis
Defended

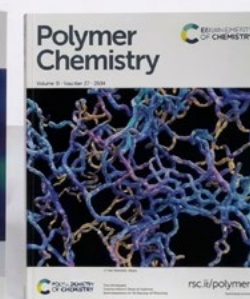
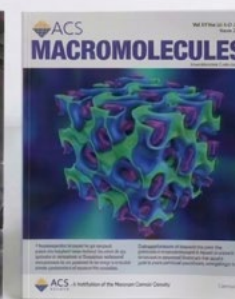
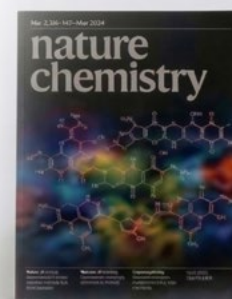
6 industrial
9 cotutelle

Visiting
researchers
in 2025

40

9

Organized
congresses



RESEARCH HIGHLIGHTS

POLIMERIZATION ENGINEERING & SIMULATION

Adding machine learning to the polymer reaction engineering toolbox

K. Farajzadehahary, (S. Hamzehlou, N. Ballard). *Progress in Polymer Science* (2025)

POLYMERS FOR HEALTH

Surface functionalization of multilayer nanoparticles with hyaluronic acid or alternative polymers

M. A. Motta, U. Semenko, U. Goswami, et al. (A. Larrañaga and M. Calderón). *Carbohydrate Polymers* (2025)

MOLECULAR & SUPRAMOLECULAR MATERIALS

Moiré two-dimensional covalent organic framework superlattices

G. Zhan, B. Koek, Y. Yuan, et al. (A. Mateo-Alonso). *Nature Chemistry* (2025)

POLYMERS PHYSICS & ADVANCED MANUFACTURING

Can five chemically different lamellar crystals self-assemble in a single spherulite?

E. Matxinandiarena, R. A. Pérez-Camargo, V. Sebastián, et al. (A.J. Müller). *Nature Communications* (2025)

POLYMERS & SUSTAINABILITY

Fully Recyclable Pluripotent Networks for 3D Printing Enabled by Dissociative Dynamic Bonds

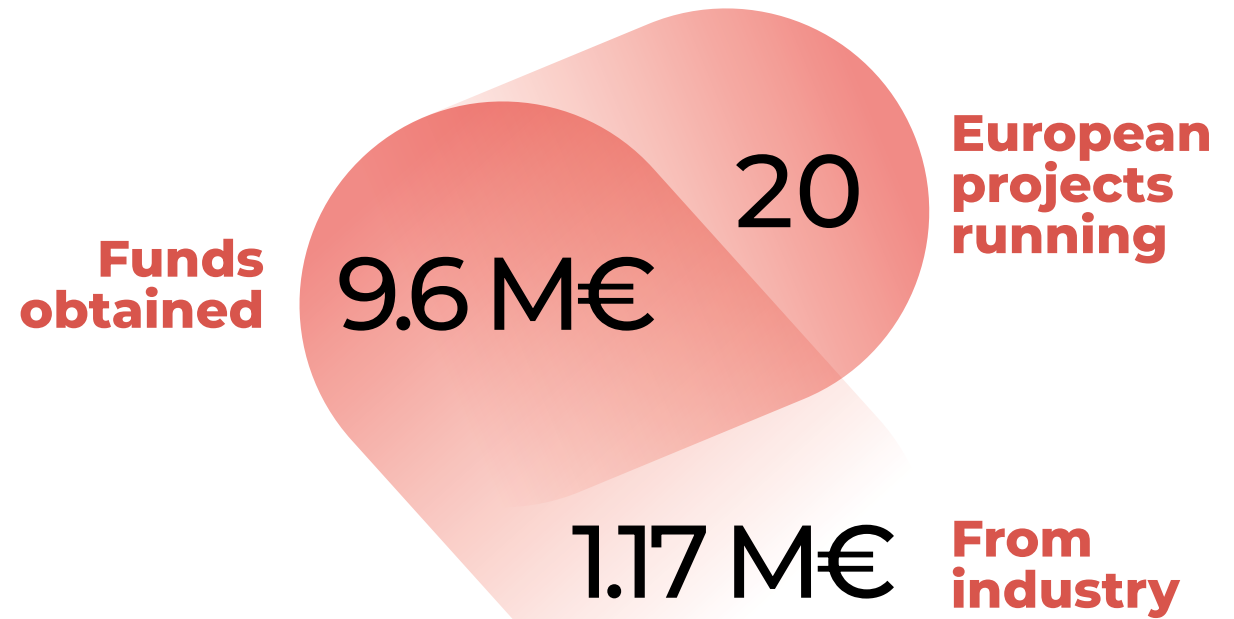
M. Caliori, F. Vidal, D. Mantione, et al. (H. Sardon). *Advanced Materials* (2025)

POLYMERS & ENERGY

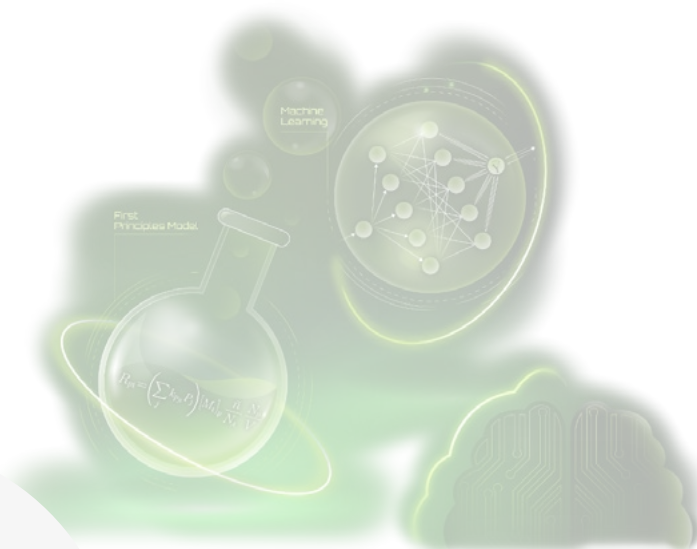
Innovative Biobased Thermoplastic Binders for Sustainable Lithium-Ion Batteries

D. de Morais Zanata, R. Del Olmo, M. Larumbe, et al. (I. Villaluenga). *ACS Omega* (2025)

FUNDING



MAIN EU PROJECTS



The control of chemical reactors is a well-studied problem but is especially challenging in the case of polymerization reactors because many of the important characteristics of the polymer evolve continuously with time and cannot be measured directly online.

Aided by first-principles mathematical models of the polymerization process, **CINEMA** aims to address this problem by using **machine learning** to accelerate the prediction of the evolution of the polymerization such that reactors can be controlled on-line.



KNOWLEDGE TRANSFER

SPIN-OFF



8 NEW PATENT APPLICATIONS AND THE LAUNCH OF 1 SPIN-OFF

hevea3D.es

The screenshot shows the Hevea 3D website. The main heading is 'Hevea 3D : Where ideas take shape'. Below it is the tagline 'We print flexible, durable elastomeric parts that bring your ideas to life.' and a 'Contact us' button. The website features three images of 3D printed parts: a collection of yellow and white rings, a white lattice structure, and a yellow lattice structure. Below each image is a caption: '3D printed elastomers for functional prototyping.', 'Mass production with guaranteed professional finishes.', and 'On-demand printing for any imagined project.'

KNOWLEDGE TRANSFER

20 ACTIVE BILATERAL AGREEMENTS



**Industrial
Liaison
Program on
Polymerization
in Dispersed
Media**

80 R&D TECHNICAL ASSISTANCES

PROVIDED TO 29 PARTNERS

- Composition Analysis
- Residual Monomer and MWD Analysis
- Thermal Characterization
- Mechanical Characterization Assays and Adhesive Testing
- Physico-chemical Characterization
- Rheological and Colloids Characterization
- Polymerization Reactors
- Processing Thermoplastics



TRAINING

112 PhD Candidates

19 Master's Students

14 Undergraduate interns

**Introduction
to the
Structure and
Properties of
Polymers**

01

02

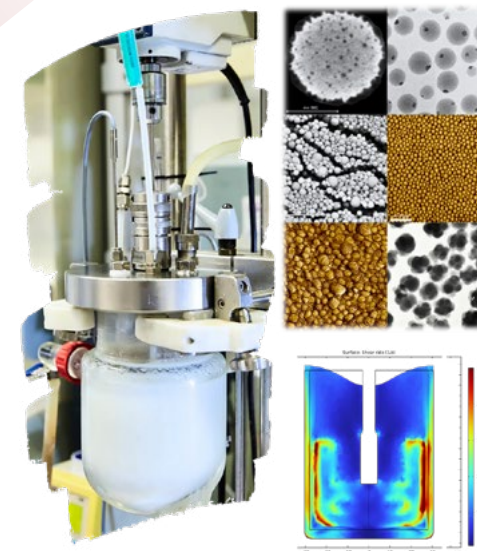
**Emulsion
Polymeri-
zation
Processes
2025**

**Double Master in
Polymer Science**

03



université
de BORDEAUX



Next Workshop on EPP

September 7-11, 2026



SCIENCE AND SOCIETY

MAIN ACTIVITIES

Emakumeak Zientzian • Inspira Bizitzak • Inspira STEAM
Pint of Science • Zientzia Astea

School
visits

4

8

Self-led
outreach
initiatives

40

Researchers
performing
outreach
activities



FIRST ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORT



labur.eus/ESGreport



POLYMAT

The background of the page features a light gray gradient. On the right side, there is a large, abstract graphic composed of several overlapping, rounded shapes in various shades of red and orange, creating a sense of depth and movement.

ACTIVITY
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2025