



Università
di Brescia

SEMINAR

Dr. Ander Centeno-Pedrazo

Researcher — CIC energiGUNE

Thermocatalysis and Ionic Liquids (TES) Group · Basque Research and Technology Alliance (BRTA)



ABOUT

Dr. Ander Centeno-Pedrazo is a Researcher in the Thermocatalysis and Ionic Liquids (TES) group at CIC energiGUNE, Basque Research and Technology Alliance (BRTA), Spain. He holds a Ph.D. in Applied Chemistry and Polymeric Materials from the University of the Basque Country (UPV/EHU, 2023, Cum Laude), developed as an Industrial Doctorate with Tecnalia on ionic liquid-based catalysts for the conversion of CO₂ and epoxidised vegetable oils into cyclic carbonates for non-isocyanate polyurethanes. He was a postdoctoral researcher at Queen's University Belfast (2023–2024) in the group of Prof. Haresh Manyar, working on heterogeneous catalysts for sustainable aviation fuels, before joining CIC energiGUNE in 2024, where he develops ionic liquid-based catalytic systems for the conversion of CO₂ and plastic waste into fuels.

Dr. Centeno-Pedrazo will be hosted by the DICATAM Department and the CEEP Laboratory — Catalysis for Energy and Environmental Protection at the University of Brescia, where he will give a seminar open to students, PhD candidates and researchers.

SEMINAR PROGRAMME

WEDNESDAY

30
SEPTEMBER

14.30

Seminar Room DICATAM
Via Branze 43, 4th Floor

Cyclic carbonates from CO₂ and vegetable oils as bio-precursors for non-isocyanate polyurethanes development: a journey from monomer synthesis to industrial application

Non-isocyanate polyurethanes (NIPUs) offer a safer, more sustainable alternative to conventional isocyanate-based polyurethanes. This talk presents the use of CO₂ and soybean oil as renewable feedstocks: epoxidized soybean oil is converted into carbonated soybean oil (CSBO) via CO₂ cycloaddition, catalysed by newly developed phosphonium-based ionic liquids. The resulting CSBO is reacted with amines to produce NIPUs, whose properties are compared with conventional vegetable-oil-based polyurethanes. The talk also covers the industrial applicability of these materials in the coatings sector, including direct NIPU coating formulations and 2K hybrid NIPU-epoxy systems benchmarked against commercial epoxy coatings — a practical step toward safer, more sustainable industrial coatings.

DICATAM — Department of Civil, Environmental, Architectural Engineering and Mathematics

University of Brescia · Speaker: Dr. Ander Centeno-Pedrazo — acenteno@cicenergigune.com · Information: Prof. Nancy Artioli — nancy.artioli@unibs.it