

A LITTLE JOURNEY THROUGH GLYCEROL-DERIVED GREEN SOLVENTS

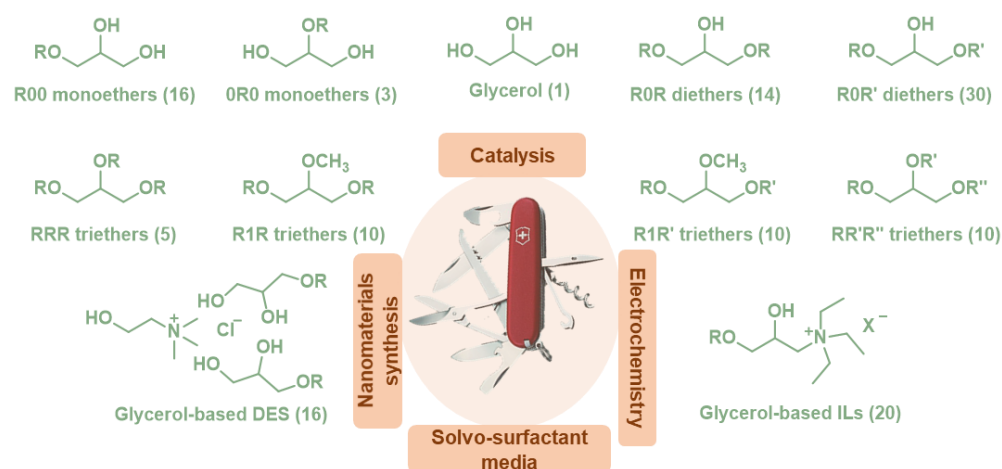
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The use of a conventional solvent is associated with a huge impact, due to its volatility, toxicity, flammability, and carbon footprint caused by their fossil origin. Thus, it is essential to develop alternative benign solvents capable to replace conventional ones, and also neoteric solvents with undescribed properties. In this context, a vast portfolio of molecular and ionic solvents derived from glycerol has been developed over the last years in our group. Solvents were synthesized in a sustainable way from renewable platform molecules, such as glycidol and epichlorohydrin. Ecotoxicity essays, low volatility and flammability point to their interest as sustainable media. Full characterization of solvents —density, viscosity, electrochemical parameters, polarity, etc.— reveals outstanding ranges of properties values. This allows an *à-la-carte* design of the solvent for applications in catalysis, electrocatalysis, preparation of recoverable catalysts and nanostructured materials, and solubilization of active molecules.



Alejandro Leal-Duaso graduated in Chemistry at the University of Zaragoza, specializing his research interests within the field of catalysis and Green Chemistry. After a PhD and a research stay at University of Toulouse III developing, characterizing and applying over 100 new glycerol solvents, he got a postdoctoral position to investigate for the Government of Aragon the situation in Europe on the remediation of lindane wastes (2021). A postdoc at Sorbonne University of Paris, under a Margarita Salas fellowship project

(2022–2024), gave him the opportunity of widening the research scope with electrochemistry and electrocatalysis for the remediation of environmental pollutants such as CO₂, nitrates and urea in wastewater. He has participated in 14 competitive research projects, coauthored 22 publications and 46 communications in conferences in 6 countries, organized 3 scientific symposia, and supervised over 12 students. His current research interests at ISQCH (CSIC) aims at the development of new green solvents, outstanding DES and ionic liquids, for their application in electrocatalysis, solubilization, batteries, and design of nanostructured catalysts.