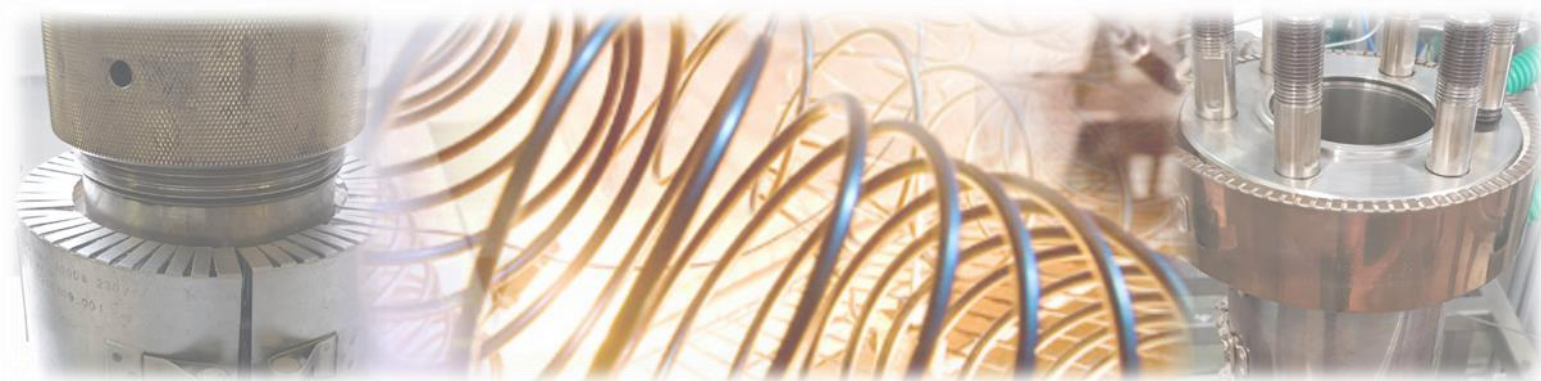


The IDELAM Company and ICMCB laboratory**Innovative supercritical CO₂ processes to face the recycling and waste management challenges of our modern society***From Laboratory research to Industrial development***Thomas VOISIN¹, Eric DURIVAUT¹, Cyril AYMONIER²**¹IDELAM, 87 avenue du Dr. Albert Schweitzer ; 33600 Pessac, France²CNRS, Univ. Bordeaux, Bordeaux INP, ICMCB, UMR 5026, F-33600 Pessac, France

Waste management and recycling have become a main issue for most countries across the world, as primary resources are becoming scarcer unlike waste products. Innovation regarding reuse, recycling or energy valuation has never been more topical and great progress are made toward the reduction of final waste. However, with the growing interest of recycling methods, new challenges are highlighted. The complexity of tons of manufactured products reveals the limits of the common shredding & sorting processes. This leaves an empty space for new kinds of recycling processes, and supercritical fluids have long demonstrated their great abilities in this domain.

With its low critical conditions, supercritical CO₂ has been used at an industrial scale for quite a long time now, from extraction and material impregnation, to foaming agent or decontamination. Its unique interaction with plastics and polymers in general, has been the starting point for the research performed in 2010 at the Institute of Condensed Matter Chemistry of Bordeaux (ICMCB). With an initial project regarding the recycling of used solar panels, it quickly appears that the conditions used can also be applied to other non-recycled multi-material wastes. This work will then lead to a patent filed by Cyril Aymonier's team.ⁱ

Fast-forward 2018, the extensive research works on recycling from C. Aymonier meet the business director Eric Durivault, field experienced in waste treatment. This meeting will quickly give birth to the creation of the IDELAM company in 2019.

Since its foundation, IDELAM has been developing the scCO₂ based technology for an extensive number of applications. Since the first year dedicated to the proof of concept on a large number of products, the start-up has gained a growing interest from industrial manufacturers, recycling

centres or eco-organisms and has been labelled by the Solar Impulse Foundation. IDELAM is now transitioning from its capital risk founding toward its capital risk development, and intends to strengthened its collaboration with the ICMCB with the development of new projects regarding the use of supercritical fluids for recycling.



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ⁱ C. AYMONIER, C. SLOSTOWSKI, WO 2017037260.