

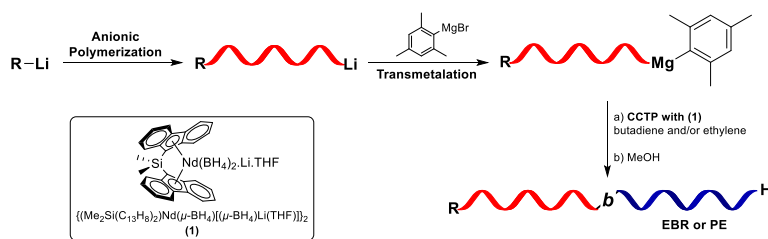
**Research Collaboration between CP2M-Michelin within the CHEMISTLAB
(a joint laboratory between the CP2M, ICBMS and Michelin)**

Macromolecular engineering for the synthesis of olefin block copolymers

Study context. CP2M (UMR 5128), ICBMS (UMR 5246) and Michelin united to create the ChemistLab joint laboratory on June 1, 2019. The research program focuses on designing high-performance elastomers as part of a circular economy strategy. The teams have discovered that rare earth metallocene catalysts lead to the synthesis of a new range of elastomers through the copolymerization of ethylene and butadiene. These are known as Ethylene-Butadiene Rubber (EBR).¹ In addition, these catalysts enable the synthesis of EBRs to be controlled by Coordinative Chain transfer polymerization (CCTP) through the use of alkylmagnesium compounds as chain transfer agents.² This specific property has been exploited for the synthesis of block copolymers, in particular thermoplastic elastomers^{3–5} and for the design of EBR-based nano-objects.⁶

Objectives. We want to expand on the original concepts developed in previous work, such as the shift from anionic polymerization to CCTP for other families of catalysts. The aim of this project is

to access a wide range of olefin block copolymers in order to obtain even more high-performance materials. This work will benefit from the expertise developed within the ChemistLab joint laboratory.



Requested skills. The candidate should hold a master's degree or an engineering degree with a specialization in chemistry and physical chemistry.

Application. Applications should be sent to christophe.boisson@univ-lyon1.fr, along with a cover letter, resume, and references. Supervisors: C. Boisson, D. Montarnal, F. D'Agosto

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