CYCLE DE CONFÉRENCES DE CHIMIE

Avec le concours de : Université Clermont Auvergne
SIGMA Clermont

Lundi 20 janvier à 16 h

Amphi Rémi (site des Cézeaux)

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Valorization of vegetable oils through (organo)catalysis

Keywords: Vegetable oils, Dehydrogenation, Organocatalysis, Retro-benzoin condensation, Aldehydes, Esters.

Summary: With the depletion of the fossil carbon reserve and the need to limit emissions of greenhouse gases, the utilization of renewable biomass as a feedstock has become a necessity in the long term and a real challenge for both chemists and biochemists. Among the primary components of biomass, vegetable oils are attractive renewable raw materials for the chemical industry.[1] Indeed, their competitive cost and wide availability[2] make them adequate for numerous high-volume commercial applications. For instance, they can be used as biodiesel but could be best converted to valuable building blocks for a wide range of applications.

One way to increase the added-value is to cleave unsaturated vegetable oil derivatives to shorter fragments, notably through oxidative and reductive ozonolysis. However, this method requires the use of ozone, which is highly toxic and involves the formation of explosive ozonide intermediates.

To tackle this issue, we have developed original strategies for the production of fatty aldehydes or esters from unsaturated vegetable oils, involving the formation of oxidized intermediates through transition-metal catalysis[3] and their subsequent cleavage using organocatalysis.[4] The aldehydes and esters obtained are excellent building-blocks for the preparation of bio-based surfactants and polymers.

References:

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