



Catalysis with Earth-Abundant Metals: New Opportunities in Organic Synthesis

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Transition metal catalysis has revolutionized chemical synthesis. Transformations such as metal-catalyzed cross-coupling, asymmetric hydrogenation, olefin metathesis, and C–H functionalization have reshaped how chemists construct bonds and, in doing so, expanded accessible molecular space. Historically, these reactions have relied on closed-shell, precious-metal complexes that undergo predictable two-electron redox processes. The growing emphasis on sustainability has prompted a shift toward earth-abundant first-row transition metals, including manganese, iron, cobalt, and nickel. These elements feature weaker ligand fields, accessible one-electron redox chemistry, and frequently open-shell (paramagnetic) metal complexes. This transition raises questions such as (i) what types of catalytic transformations do open shell earth-abundant metal catalysts promote? and (ii) what are the underlying fundamental organometallic steps and how do we optimize them?

My lecture will present our work on developing catalysts with earth-abundant transition metals and answering these questions. Our work spans from the fundamental to the applied. Emphasis will be placed on collaborations with industrial partners that translate these findings into practice. Transformations that enrich C(sp³) content in drug molecules and provide new disconnections in synthesis will be emphasized.

Conference presented on:

MONDAY 12 OCTOBER 2026 à 17h30

University of Geneva – Science II building

Auditorium A-100

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It is a public conference.

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