Course: Transition metal catalysis for fine chemistry

Duration: 24 hours

Teacher(s): TUBARO Cristina (6 hours)

BIFFIS Andrea (6 hours)

ZECCA Marco (6 hours)

BARON Marco (6 hours)

Curriculum: Chemical Sciences

Description:

The object of this course is to introduce the students to the use of transition metal catalysts in homogeneous catalysis.
In particular the following arguments will be discussed in detail:

- introduction to chemical kinetics; kinetic nature of the catalytic action
- reaction mechanisms and kinetic laws for stoichiometric and catalytic reactions.
- typical (pseudo)elementary reactions in homogeneous organometallic catalysis: oxidative addition, reductive elimination, migratory insertion, β-elimination.
- carbene coordinated to transition metals: Schrock vs. Fischer type carbenes.
- olefin metathesis.
- C-C coupling reactions, with details on the Heck reaction.
- aromatic C-H bond functionalization.
- catalytic transformations of substrates containing multiple C-C bonds: alkenes, alkynes, allyls, dienes, dienyls, arenes.