Universidad de Alcalá

SUSTAINABLE CATALYTIC PROCESSES WITH ORGANOMETALLIC COMPOUNDS

Code
728

SOSCATCOM

RESEARCH AREA

Experimental Sciences

COORDINATOR

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KEY WORDS

Organometallic chemistry, Catalytic processes, Bioplastics, ROP polymerization, Green catalytic oxidation, Small molecules activation

AIM

- Chemical Industry
- Plastics Industry
- Packaging
- Coatings

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SOSCATCOM

ABOUT US

SOSCATCOM group belongs to the Inorganic Chemistry area in the University of Alcalá and has a strong expertise in the development of catalysts for polymerization, green oxidation and hydrogenation reactions. Recently their research activity has been oriented towards CO2 valorisation, polymerization of functionalized monomers and monomers coming from renewable resources. Their work includes the design and synthesis of new species mono and polymetallic based in Earth abundant elements such as Al, Zn, Ti, Fe and alkali metals and in the study of their activity in catalytic processes. Their interest also expands towards the development of catalysts active for bioplastics generation. Another research line in progress is focused in the study of the influence of non-covalent interactions in polymerization reactions and organic transformations.

RESEARCH AREA

- Homo and heterometallic complexes of Earth abundant metals
- Polymerization of renewable monomers and multifunctional monomers
  CO2 and small molecules activation
- C-H and C-X bond activations, C-C bond formation promoted by block p metals
  C-C and C-E bond formation catalyzed by titanium complexes in low oxidation states
- Synthesis and characterization of nanocatalysts via the anchoring of titanium complexes to silica nanoparticles
- Synthesis and characterization of homogenous catalysts for oxidation processes using green oxidants
- Mechanistic studies of stochiometric and catalytic processes mediated by metal complexes
- Design of polymers with advanced properties
- Development of hybrid photocatalysts for CO2 reduction

OFFERED SERVICES

- Research in Organometallic Chemistry: synthesis, characterization and catalytic applications of organometallic compounds
- Design of polymers with advanced properties
- Bioplastics from renewable resources
- Teaching and training in Inorganic Chemistry and in Sustainable chemistry in Postgraduate programs

MARKETABLE RESULTS