Synthesis of new Schiff base derived catalysts: application towards enantioselective reactions in greener and more sustainable media

Fact Sheet

Project Information

ENCAT

Grant agreement ID: 247924

Project closed

Start date
3 December 2009

End date
2 December 2012

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
€ 45 000,00

EU contribution
€ 45 000,00

Coordinated by
UNIVERSITE LYON 1 CLAUDE BERNARD
France

Objective

Over the past few years, the need for greener processes in chemical industries has considerably grown up. In order to solve the issue of organic solvents, non-pollutants media such as water, fluorinated solvents and supercritical fluids (SCFs) have attracted increasing attention. Beside, the demand for enantiopure compounds in the life sciences has stimulated interest in asymmetric catalysis. So the use of asymmetric catalysts in green solvents holds much promise for the development of sustainable chemical manufacturing. Among numerous catalysts, Schiff base complexes of metal ions show high catalytic activity and are commonly used in various reactions but the employment of these catalysts in environmentally friendly solvents still rare particularly for asymmetric catalysis. Also we propose to develop new chiral Schiff base complexes, which can be used in supercritical fluids and perfluorinated solvents. We will focus on supercritical carbon dioxide (scCO2). One of the challenges of the proposal consists in obtaining soluble ligands in these media. The synthesis of ligands with hydrocarbon or fluorocarbon chains should solve this issue. Another concept that will be envisaged is the use of water-soluble catalysts in scCO2-water biphasic systems by addition of hydrophilic arms on the ligands. The ligands will be synthesized in few steps by condensation of primary amines and aldehydes to match the demand of low-cost, environmentally friendly, and rapid synthesis. After complexation with metals, reactions such as oxidation, epoxidation and aldolisation will be studied as well as the recovery and reuse of the catalysts. Particularly, small cyclic ether molecules will be engaged in enantioselective reactions as models to develop useful methodologies in the synthesis of bioactive cyclic ethers. Finally, our objective is to bring efficient tools for the chemists worldwide to transfer the asymmetric catalysis methodology to large-scale synthesis technology.

Fields of science (EuroSciVoc)

natural sciences > chemical sciences > organic chemistry > **aldehydes**

natural sciences > chemical sciences > electrochemistry > **electrolysis**

natural sciences > chemical sciences > organic chemistry > **hydrocarbons**

natural sciences > chemical sciences > **catalysis**

natural sciences > chemical sciences > organic chemistry > **amines**

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

FP7-PEOPLE-2009-RG - Marie Curie Action: "Reintegration Grants"

Call for proposal

FP7-PEOPLE-2009-RG
See other projects for this call

Funding Scheme

MC-ERG - European Re-integration Grants (ERG)

Coordinator

UNIVERSITE LYON 1 CLAUDE BERNARD

EU contribution

€ 45 000,00

Total cost

No data

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Region

Auvergne-Rhône-Alpes > Rhône-Alpes > Rhône

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

Last update: 25 May 2022

Permalink: https://cordis.europa.eu/project/id/247924