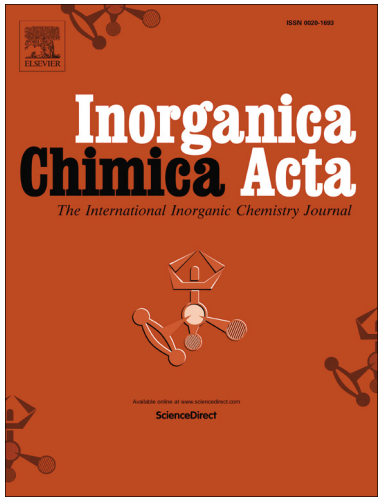

Review article

Aziridination of Alkenes Promoted by Iron or Ruthenium Complexes

Caterina Damiano, Daniela Intrieri, Emma Gallo

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Aziridination of Alkenes Promoted by Iron or Ruthenium Complexes

Caterina Damiano, Daniela Intrieri and Emma Gallo*

Department of Chemistry, University of Milan, Via C. Golgi 19, 20133 Milan (Italy). E-mail address: emma.gallo@unimi.it.

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Abstract

Molecules containing an aziridine functional group are a versatile class of organic synthons due to the presence of a strained three member, which can be easily involved in ring-opening reactions and the aziridine functionality often show interesting pharmaceutical and/or biological behaviours. For these reasons, the scientific community is constantly interested in developing efficient procedures to introduce an aziridine moiety into organic skeletons and the one-pot reaction of an alkene double bond with a nitrene [NR] source is a powerful synthetic strategy.

Herein we describe the catalytic activity of iron or ruthenium complexes in promoting the reaction stated above by stressing the potential and limits of each synthetic protocol.

1. Introduction

Aziridines, the smallest *N*-heterocycle compounds, have attracted considerable attention in the last few decades due to their many applications in biological and synthetic chemistry [1]. The aziridine functionality is often responsible for the activity of biologically active species (such as antitumor compounds, antibiotics and enzyme inhibitors) and aziridine containing molecules [2] are also useful building blocks in the synthesis of fine chemicals and pharmaceuticals [3-6]. The striking chemical properties of aziridines are due to the energy associated to the strained three-membered ring [7], which renders them very active and versatile starting materials for the synthesis of several useful molecules such as amines, amino acids, β-lactams, polymers and α-amido ketones [8, 9].

In view of their interesting chemical peculiarities and the scarcity of widespread procedures for their preparation [10], the scientific community is constantly interested in the development of new synthetic protocols which are more efficient than traditional methods such as cyclization of amino alcohols or the reaction between imines and diazo-containing compounds [9, 11, 12].