
# Comparative study of the efficiency of various mono- or bimetallic reagents for the functionalization of heterocycles: towards the synthesis of fused heteroaryl-lactones

Lynda Hammas[a], Sabrina Touchet[a] and Corinne Comoy*[a]

[a] Laboratoire Lorrain de Chimie Moléculaire, Institut de Chimie du CNRS, Université de Lorraine, Centre National de la Recherche Scientifique - Université de Lorraine, Boulevard des Aiguillettes, B.P. 70239, 54506 Vandoeuvre les Nancy Cedex, France, France

## Abstract:

Nature encompasses a myriad of natural substances that contain heterocycles within their molecular structures. These compounds play a fundamental role in chemistry and hold undeniable importance in various fields such as the pharmaceutical industry, materials science, and organic synthesis.

In the course of our research, our primary objective was to investigate and enhance the efficiency and selectivity of three distinct pathways for the metalation of halogeno-heterocycles using lithium, magnesium, and lithium magnesiate reagents. Following the metalation step, an electrophilic trapping and subsequent cyclization step are performed.

This study presents a significant challenge as it aims to facilitate the development of an efficient new methodology and strategy for the one-pot synthesis of heteroaryl-lactones. Its main purpose is to compare and evaluate these metalation routes, offering valuable insights into their respective advantages and limitations.