Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department: Department of Organic and Bioorganic Chemistry

Candidate: MSc. Stefanie Magela Perdomo

Supervisor: prof. RNDr. Milan Pour, Ph.D.

Title of Doctoral Thesis: Exploring the Unconventional Reactivity of Electron-Deficient Dendralenes Towards Nucleophiles

This PhD thesis deals with the reactivity of electron-poor [3]dendralenes towards external nucleophiles. Electron-poor [3]dendralenes are characterized by a dissonant nature due to the presence of various EWGs (electron withdrawing groups) in their skeleton, and this feature influences their behaviour upon nucleophilic attack. However, it is not possible to fully describe and predict the site attack of the nucleophiles, because of individual thermodynamic/kinetic stability in the transition state of each dendralene.

In our study, we synthesized a large variety of the dendralenes, to explore and understand their behaviour. New interesting products were observed, resulting from simple additions on one hand or complex cyclizations affording *ortho*-fused systems or bicycles on the others. Mild reaction conditions were used, and several nucleophiles underwent addition to form mainly new C-C, C-S bonds. However, all attempts to form new C-N and C-O bonds were unsuccessful, attributed to either the unreactivity of dendralenes or their complete degradation. We assume that the elimination of the dissonant nature was the driving force of these transformations.