SISOC XIII

4-6 SEPTEMBER 2022 –TARRAGONA (SPAIN)

13th
Spanish-Italian Symposium on Organic Chemistry

BOOK OF ABSTRACTS

UNIVERSITAT
ROVIRA i VIRGILI

ICIQ
Institute of Chemical
Research of Catalonia

KN-08

NEW OPPORTUNITIES IN CATALYTIC RUTHENIUM CARBENE/ALKYNE METATHESIS (CAM)

C. Saá

Centro Singular de Investigación en Química Biolóxica e Materiais Moleculares (CiQUS),
Departamento de Química Orgánica, Universidade de Santiago de Compostela, Spain.
carlos.saa@usc.es

Ruthenium vinyl carbenes derived from Cp/Cp*RuCl-based complexes have been routinely invoked as key intermediates in tandem reactions involving a carbene/alkyne metathesis (CAM).[1] These species are isoelectronic with the Grubbs-type family of catalysts, but their structural geometry and ligand properties make them more distinctive in catalytic reactions. The piano-stool arrangement of Cp*RuCl-vinylcarbenes favors a η^3-coordination mode which induces a deformation from planarity of the ruthenium carbene. Such distortion seems to increase the reactivity of the ruthenium vinyl carbene. In addition, the presence of the chloride ligand in an appropriate disposition acts as a Lewis base cocatalyst and promotes nucleophilic attacks to the ruthenium vinyl carbene (Figure 1).[2] The combination of these effects are directly related to the divergent behavior of these species.[3]

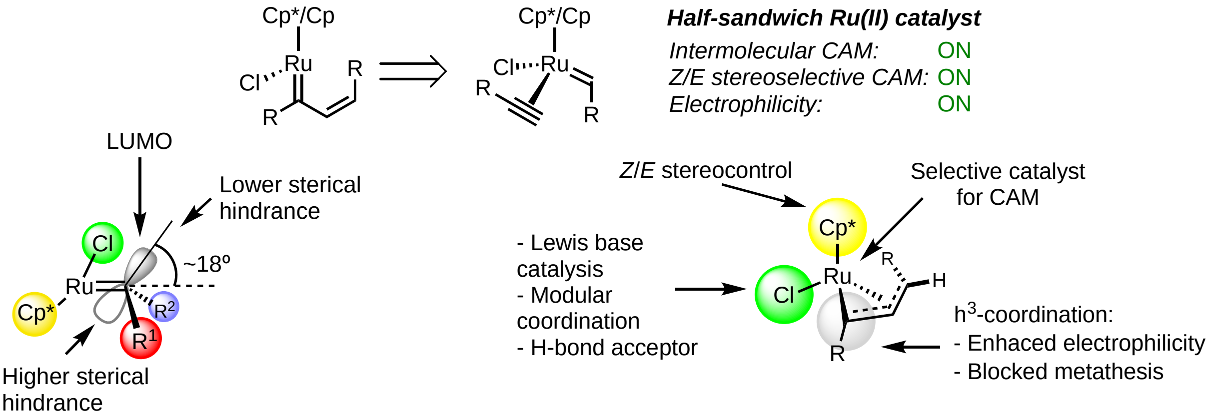

Figure 1. Reactivity and properties of ruthenium carbenes and their CAM-derived vinyl carbenes

Acknowledgements

This work has received financial support from MICINN (project PID-2020-118048GB-I00 and ORFEO-CINQA network RED2018-102387-T), the Xunta de Galicia (project ED431C 2018/04 and Centro singular de investigación de Galicia accreditation 2016-2019, ED431G/09) and the European Union (European Regional Development Fund – ERDF).

References

[1] S. Dey, S. De Sarkar, *Adv. Synth. Catal.* **2017**, *359*, 2709. [2] D. Padín, J A. Varela, C. Saá, *Chem. Eur. J.* **2020**, *26*, 7470. [3] D. Padín, J. A. Varela, C. Saá, *Synlett* **2020**, *31*, 1147.