# SULFOXIDE REDUCTION CATALYZED BY MOLYBDENUM CLUSTER SULFIDES

Juanjo Mateu-Campos, Natalia Gresa-Ortiz, María Gutiérrez-Blanco and Rosa Llusar

Department of Physical and Analytical Chemistry, Universitat Jaume I, Avinguda de Vicent Sos Baynat s/n, 12071, Castelló de la Plana, Spain.

During the last decade, our group has proved the potential of trinuclear Mo3S4 clusters as efficient catalysts in different organic transformations. These units decorated with diamino and imidazolylamino ligands resulted in excellent catalysts in hydrogenation processes i.e., the reduction of azo and nitrocompounds to yield the corresponding aniline as well as in the Z-selective semihydrogenation of alkynes [1,2]. In both cases, the reaction occurs through a sulfur based mechanism.

Motivated by the interesting reactivity of these catalysts, we have recently explored the activity of these cuboidal units in new and attractive green procedures. Interestingly, these trinuclear clusters resulted in good catalysts for the reduction of sulfoxides without using strong reductants or other toxic additives.
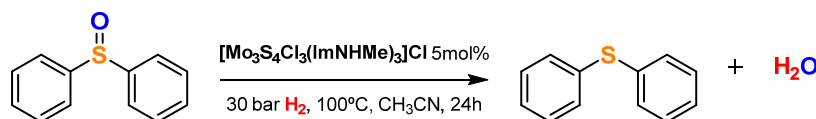
Herein, we report an efficient protocol using the imidazolylamino cluster salt $[Mo_3S_4Cl_3(ImNHMe)_3]Cl$ (ImNHMe=methyl[(1-methyl-1H-imidazol-2-yl)methyl]amine) as catalyst for the deoxygenation of diphenylsulfoxide using hydrogen as reductant. Optimization of the reaction condition and mechanistic experiments will be presented.

___

[1] Guillamón, E., Oliva, M., Andrés, J., Pedrajas, E., Safont, V. S., Algarra, A. G., Basallote, M. G. *ACS Catalysis* 2021, **11**, 608-614.

[2] Gutiérrez-Blanco, M., Guillamón, E., Safont, V. S., Algarra, Andrés G., Fernández-Trujillo, M. J., Junge, K., Basallote, M. G., Llusar, R., Beller, M. *Inorganic Chemistry Frontiers*, 2023, **10**, 1786-1794.