



Mixed metal carbides for biomass upgrading

From 2018-2022 | Total budget € 300,000

Noble metals such as platinum and palladium are commonly used catalysts for (de)hydrogenation and hydrogenolysis. However, the high cost and limited availability of those metals have motivated a search for new types of catalyst. Promising results have been obtained using tungsten and molybdenum (W & Mo) carbides. In this study, we will use these carbides as a replacement for noble metal catalysts for the deoxygenation of fatty acid which are renewable biobased organic acids.

However, up to now it is not known what the active site in these catalysts is. Therefore, increasing the performance of these catalysts is still a matter of trial and error. We are aiming to identify the structural properties of these catalysts, inter alia by X-ray techniques, and relate those properties to catalytic performance. This will make a rational catalyst design possible. These X-ray experiments will be performed in cooperation and at the Brazilian synchrotron Laboratório Nacional de Luz Síncrotron (LNLS) in Campinas Brazil. We will perform in situ and operando characterization using XRD and X-ray absorption spectroscopy as well as X-ray photoelectron spectroscopy (XPS).

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