

# Immobilization of Tin(IV)porphyrin in modified mesoporous alumina as catalyst for esterification reaction

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The development of efficient and selective catalysts in reactions under mild conditions and low cost has been a major challenge for research in catalysis area. Organic esters are a very important class of chemicals having applications in a variety of areas such as perfumery, flavors, pharmaceuticals, plasticizers, solvents, and intermediates. Among the catalysts employed in esterification reactions, Lewis acids have significant advantages compared to the liquid Brønsted acid catalysts, such as their low corrosiveness and great water tolerance<sup>[1,2]</sup>. It has recently been reported the use of Tin(IV) metalloporphyrins (SnP) in the field of catalysis, playing roles as catalysts in various reactions such as hydrolysis of epoxides<sup>[3]</sup> and silanization of alcohols and phenols<sup>[4]</sup> since these complexes presents interesting acid properties that appropriately adjusts to that necessity of this class of catalytic reaction. In this work, we describe the synthesis, spectroscopic properties and immobilization of a Sn(IV) porphyrin in mesoporous alumina (MA) (Sn/MA) and the use of the resulted compounds (SnP and SnP/MA) as catalyst for acid esterification reaction. The neutral free base porphyrin [5,10,15,20-Tetrakis(pentafluorophenylporphyrin)](5F) was synthesized following the Lindsey methodology<sup>[5]</sup>. The product was characterized by elemental analysis (CHN) and <sup>1</sup>H and <sup>19</sup>F NMR. The porphyrin 5F was metaled with Sn(IV) ion (Sn5F) using a modification of the Kobayashi methodology<sup>[6]</sup>. The complex was characterized by CHN and UVVIS. The MA solid was synthesized following the Li methodology<sup>[7]</sup> and it was characterized by DRX, MEV and TEM. The MA solid was functionalized using a 3-APTES resulting in the solid named by MAS. The silanized solid was used as suport for the immobilization of Sn5F<sup>[8]</sup> (Figure 1). The resulted material was characterized by CHN, DRX, MEV, TEM and UVVIS solid. The catalytic studies using the prepared solid Sn5F/MAS in esterification reaction are in progress.

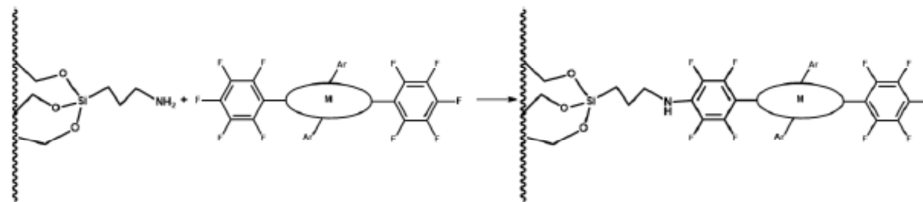


Figure 1: Schematic representation of the immobilization process of the Sn5F in the mesoporous alumina previous silanized with 3-APTES (3-aminopropyltriethoxysilane).

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