

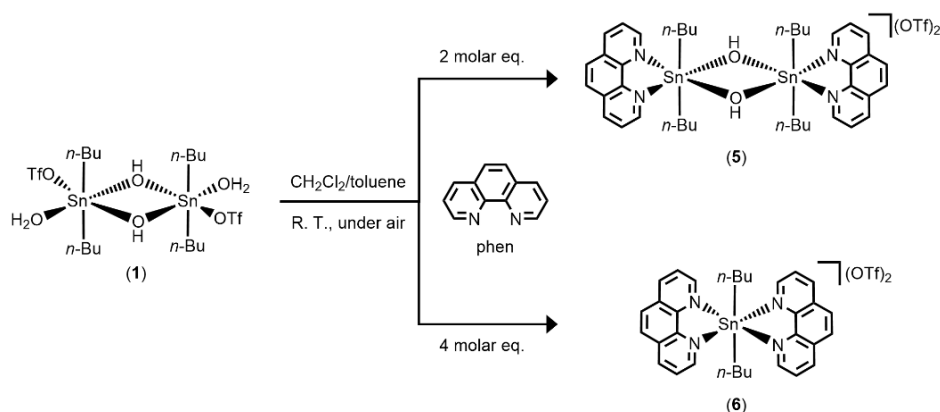
## Organotin(IV) Trifluoromethanesulfonate Chemistry: Isolation and Characterization of Novel 1,10-Phenanthroline-based Derivatives

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The first study describing the synthesis of organotin trifluoromethanesulfonates dates back to the 1970s [1]. Since then, this class of compounds has attracted much interest in synthesis and homogeneous catalysis, acting as efficient *Lewis* acid catalysts. Beneficial effects have been described for the aldol reaction of *Mukaiyama* [2], the *Robinson* annulation [3], the acetylation of alcohols [4], the transesterification of dimethyl carbonate (DMC) with phenol [5], and the direct synthesis of DMC from methanol and carbon dioxide [6, 7].

In the course of our ongoing studies on the reactivity of  $[n\text{-Bu}_2\text{Sn}(\mu\text{-OH})(\text{H}_2\text{O})(\text{CF}_3\text{SO}_3)]_2$  (**1**) toward nitrogen-containing heterocyclic compounds [8, 9], we report herein the synthesis and characterization of two novel diorganotin trifluoromethanesulfonate derivatives,  $[n\text{-Bu}_2\text{Sn}(\mu\text{-OH})(\text{phen})]_2[\text{CF}_3\text{SO}_3]_2$  (**5**) and  $[n\text{-Bu}_2\text{Sn}(\text{phen})_2][\text{CF}_3\text{SO}_3]_2$  (**6**) [10]. They result from the reaction of **1** with 1,10-phenanthroline (phen) with the latter acting as bidentate ligand. Complexes **5** and **6** were fully characterized by IR, <sup>1</sup>H, <sup>119</sup>Sn, <sup>13</sup>C, and <sup>119</sup>Sn{<sup>1</sup>H} NMR spectroscopy, mass spectrometry, elemental analysis, and X-ray diffraction analysis. Monitoring of the reaction by <sup>119</sup>Sn{<sup>1</sup>H} NMR spectroscopy in solution (CD<sub>3</sub>CN) and as a function of the amount of phen added, revealed the successive *in-situ* formation of additional species **2**, **3**, and **4**. While compounds **2** and **4** were already described in the literature, further investigations were carried out to isolate and identify species **3**. Furthermore, by changing the solvent conditions from acetonitrile to dichloromethane, and in a 1:1 molar ratio of **1** and phen, an unprecedented mononuclear hydrated di-*n*-butyltin cation,  $[n\text{-Bu}_2\text{Sn}(\text{phen})(\text{OH})(\text{H}_2\text{O})][\text{CF}_3\text{SO}_3]$  (**7**), was isolated, with the tin centre *N,N*-chelated by a bidentate phen ligand and bearing a terminal hydroxyl group. The structural and spectroscopic characterizations of these compounds, as well as their relationships, will be detailed in the poster.



## References :

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