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### Oxide nanomaterials by non-hydrolytic sol-gel process

The non-hydrolytic sol-gel process involves the reaction in non-aqueous media of several precursors (from transition metals, post-transition metals or metalloids) with organic oxygen donors instead of water. The reaction of chloride precursors with an ether or an alkoxide at 80 up to 150°C has provided useful alternatives to conventional sol-gel routes for the design of oxide and mixed oxide materials. This preparation can lead to interesting morphologies (figure 1) and crystallinities. These nanomaterials have been successfully used as heterogeneous catalyst, as well as energy materials. In this presentation, I will focus on recent results concerning other non-hydrolytic routes involving for instance ester elimination (Figure 2), or original.



Figure 1: SEM images of calcined TiO<sub>2</sub> samples



Figure 2: Synthesis of TiO, using acetic anhydride as an oxygen donor



Figure 3. Non-hydrolytic sol-gel synthesis of titanium oxophosphonate hybrid materials

#### **Speaker Biography**

Johan Alauzun is an associate professor of the University of Montpellier. He is mainly focus on mesoporous hybrids and oxide materials as well as surface modifications. He has 48 publications that have been cited over 1300 times and his publication H-index is 18.

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