Abstract

Thermal behavior of the complexes $\text{Pd}_2(\text{dppm})_2\text{Cl}_2$, $\text{Pd}_2(\text{dppm})_2(\text{SnCl}_3)\text{Cl}$ and $\text{Pd}_2(\text{dppm})_2(\text{SnCl}_3)_2$ (dppm = bis[diphenylphosphino(methane)]. ((C_6H_5)_{2}PCH_2P(C_6H_5)_{2}) in the solid state and immobilized onto porous Vycor glass was studied. Similar decomposition mechanisms were observed for the solid and immobilized complexes, with a small thermal stabilization upon immobilization. The decomposition products were characterized by X-ray diffractometry, Raman and diffuse reflectance infrared spectroscopy, which indicated the presence of a mixture of metallic palladium and oxidized species such as $\text{PdO}$, condensed phosphates, $\text{SnO}_2$ and $\text{SnP}_2\text{O}_7$. According to X-ray diffractometry, the decomposition products of the immobilized complexes presented higher amounts of $\text{PdO}$ than the solid-state residues, probably as an effect of interactions with silanol groups present in the glass surface.

Keywords

Palladium(I) complex, porous Vycor glass, bis[diphenylphosphino(methane)], thermogravimetric analysis.