# CHARACTERIZATION OF $Co_xZn_{7-x}Sb_2O_{12}$ SPINEL OBTAINED BY PECHINI METHOD

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**Abstract**

Oxides with spinel structure have been studied for many decades. The reason is a wide variety of application as pigments, refractories and also as a model structure to studies that evaluate the relative stability of ions in octahedral and tetrahedral sites. Zinc-antimonium spinels ($Zn_7Sb_2O_{12}$) were synthesized by Pechini method, substituting the cation $Zn^{2+}$ by $Co^{2+}$, according to the stoichiometry $Co_xZn_{7-x}Sb_2O_{12}$ (x = 0 – 7). Thermal characterization of the powders, after pyrolysis, was done using TG/DTA analysis, being observed different mass losses, according to the cobalt amount in the resin. Powders were calcined at 600 to 1000 °C and characterized by XRD, BET and IV spectroscopy. Maximum cristalinity was obtained at 1000 °C. Materials with x = 5 – 7 presented a secondary phase (Co, Zn)$Sb_2O_6$. Using infrared analysis, the possible sites were $Zn^{2+}$, $Co^{2+}$ and $Sb^{2+}$ are located in the net were inferred.

Keywords: spinel, $Zn_7Sb_2O_{12}$, Pechini, cobalt

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