

Thesis Title                      Application of Inorganic Tin Compounds as Flame Retardant in Polymeric Materials

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#### Abstract

Zinc hydroxystannate and Zinc stannate which are flame retardant and smoke suppressant were prepared. Zinc hydroxystannate was prepared directly from cassiterite. The mineral cassiterite was fused with sodium hydroxide solid, and the fused product was dissolved in hot water and purified. Zinc chloride solution was added to form zinc hydroxystannate. Zinc stannate was synthesized by directly heating zinc hydroxystannate to get rid of water molecules. The prepared samples were white solid insoluble in water. The percentage yield of the preparations was 83.87 for zinc hydroxystannate and 99.81 for zinc stannate. The influences of zinc hydroxystannate and zinc stannate on flame retardant, tensile strength and impact strength in low density polyethylene and polypropylene were studied. It was found that the mechanical properties of low density polyethylene and polypropylene did not significantly changed but their flammability were decreased by adding zinc hydroxystannate in the level of 5 pphr compared with no addition. While adding zinc stannate increased their flammability.