EFFECTS OF PREPARATIONS: THE PECHINI, SCHIFF BASE COMPLEX AND COPRECIPITATION, ON STRUCTURE AND PROPERTIES OF $LaCoO_3$ PEROVSKITE OXIDATIVE CATALYST

INTRODUCTION

Volatile organic compounds (VOCs) are one of the most common indoor air pollutants. They are found not only in industrial and manufacturing sites but also in commercial workplaces and domestic households. Many of these compounds are not only irritants, but are also suspected carcinogens and pose a significant health risk. The traditional treatment methods for air-borne VOCs are variety, but an attractive technology for the degradation of VOCs is heterogeneous catalytic oxidation.

Oxidative catalysts are component oxides that cations have several oxidation states and can be rapidly reduced and reoxidized. The oxidative catalyst capable of rapid and reversible oxidation-reduction could be used as an oxygen carrier to cause a partial or a total oxidation reaction.

Perovskite type oxides contribute to the high activity of mixed oxides by ABO_3 (A: the large ion in the dodecahedral hole and B: the transition metal ion). The important structural feature of the perovskite is distortion in the individual BO_6 octahedral. The transition metal B in perovskites can be particularly active in oxidative catalysis.

The perovskites can be obtained using several methods including solid state reaction, coprecipitation, sol-gel methods. In order to prepare the perovskite such as $LaCoO_3$ is by oxide-mixing method based on solid state reaction. However, this method requires high calcination temperature and long calcination periods to eliminate the unreacted starting oxides. To overcome these inevitable disadvantages, some methods including the sol-gel and the coprecipitation methods have been

performed for preparing fine and more homogeneous $LaCoO_3$ powder at low temperature.