SYNTHESIS AND THERMAL STUDIES OF SOME METAL OXIDES (LiAlO₂, Al₂O₃, Fe₂O₃)

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ABSTRACT

SYNTHESIS AND THERMAL STUDIES OF SOME METAL OXIDES (LiAl₂O₃, Al₂O₃, Fe₂O₃)

Metal Oxides compounds, LiAlO₂, Al₂O₃, Fe₂O₃ have been synthesized. Thermogravimetry and differential scanning calorimetry (TG–DSC), and elemental analysis were used to study the thermal behavior of these compounds. The TG– DSC curves show the LiAlO₂, Al₂O₃, Fe₂O₃ compounds shows several weight losses. The thermal stability of the metal oxides depends on the nature of the individual materials. These curves also show that the thermal decompositions occurs in several steps depending on the respective metal oxides.

CHAPTER 1

INTRODUCTION

1.1 Background

Materials are diverse in our life and have many uses. Many applications of metals, ceramics, fluxing materials and composites are based upon their unique thermophysical properties. Specific heat, thermal conductivity and thermal expansion are the properties that are often critical in the practical utilization of solids as materials of construction (Yuzhu, 2007). These properties depend upon the state, chemical composition, and physical structure of that material. They also depend on temperature thermal studies of some metal oxide and to a lesser extent on pressure, to which the material is subjected. Metals are usually in the form of solid and most atoms in solids are arranged in the crystal structure form. However, some are amorphous. This project is to study the thermal properties of some metal oxides which are Lithium Aluminium Oxide (LiAlO₂), Aluminium Oxide (Al₂O₃), and Iron (III) oxide (Fe₂O₃) by using synthesize sol gel method.