PREFACE

This thesis reports the thermal decomposition of metal (II) oxalate hydrated studied by direct current electrical conductivity measurements. The eight metal (II) oxalates such as iron, chromium, manganese, cadmium, cobalt, nickel, copper and zinc are synthesized from the respective soluble salts. The thermal decomposition process of these oxalates are studied by means of simultaneous TGA, DTG and DTA techniques supplemented by two-probe direct current electrical conductivity measurements, and with systematic isothermal decomposition study at each metastable intermediate stage under static air, dynamic dry nitrogen and dynamic air atmospheres. These intermediate products are well characterized by elemental analyses, infrared spectroscopy and X-ray powder diffraction pattern in order to obtain further valuable information on thermal behaviours of metal (II) oxalates.

The thesis begins with the general introduction to the field of metal oxalates. A review of literature pertaining to thermal decomposition of metal (II) oxalates is required to clarify the nature of the problem undertaken by the author. The experimental details used in the present

work are described in Chapter II. The next four chapters deals with the thermal decomposition of metal (II) oxalates studied by direct current electrical conductivity measurements. This techniques relises on the varying electrical characteristics of different intermediate compounds formed as a function of temperature. The last chapter complies in brief the new findings reported in this thesis. A repetation of some of the references in different chapters is not avoided to make every chapter complete. A part of the work based on Chapter V has appeared in the journal (A.K.Nikumbh, A.E. Athare and V.B. Raut, Thermochim. Acta., 186 (1991) 217-233), while Chapter IV and VI are recently communicated to different well known journals.