Preface:-

"Success begins with the fellows will, its all in the state of mind, life’s battles don’t always go to the stronger or faster man, but sooner or later the man who wins is the man who thinks he can”.

The aim of this work is to prepare inorganic precipitate membranes based on sol gel method. Membranes may be solid, liquid or gas and the outer phases are usually liquid or solid. Membranes are usually thin in one dimension relative to the other two dimensions. This property is only functional or operational.

This thesis has been divided into four chapters. The first chapter contains general introduction regarding inorganic precipitated membranes. The second, third and forth chapters report preparation and transport properties of number of inorganic precipitated membranes.

Membrane potential and conductance are a measurable and reliable parameter to characterize the charge property of membrane. Membrane potentials have been measured across polystyrene based arsenate membranes separating various 1:1 electrolytes at different concentrations. Membrane potentials data have been used to calculate transference number of ions, permselectivity and also to derive the thermodynamically fixed charge density which is an important characteristic governing the membrane phenomena. In addition to evaluation of distribution coefficient, mobility, charge effectiveness and other related parameters were calculated for the characterizing the prepared membranes.
At the same time experimentally observed membrane conductance values at different temperatures have been used to compute various thermodynamic parameters.