The aim of this work is the preparation of superionic conductors based on composite compounds by solid state reactions. Superionic conductors belong to the class of materials that exhibit exceptionally high ionic conductivity in the solid state. It was reported that high ionic conductivity in this class of materials occurs by the motion of the charge carriers through liquid–like lattice (disordered materials) or through channels in the layered materials. Here we discuss the study and preparation of composite materials. Composite materials are heterogeneous materials of solid phases. The elaboration of composites offers a new degree of freedom in the search for advanced functional materials; because specific properties can, to a certain degree, be tailored by mixing appropriate phases of the electrical properties such as better shock resistance or higher strength. Although composite materials can, in principle, contain different phases, literature in the field of solid state ionics deals primarily with two phase mixtures.

In the present work, composite materials have been prepared and studied by X-ray diffraction, differential scanning calorimetry, scanning electron microscopy, electrical conductivity and impedance measurements.