

## Preface

A polymer composite is an excellent category of the materials that have a great position in the broad engineering applications. It is also necessary to be concerned before the study to have a glance at the thermomechanical analysis of the polymer composite. Thermomechanical analysis of polymer composite provides extraordinary information about different properties as softening points, thermal expansion, phase changing, glass transition temperature. There is a great effect on the properties of the polymer composites applying the pressure as a function of the temperature. Diffusion and transport is also an indispensable phenomenon of every aspect of our life and has innumerable applications in the industrial and engineering process. The area of diffusion behavior of wood/plastic composites has gained considerable attention during the last decade owing to the variety of applications. Membrane transport for gas separation is a hot topic nowadays in the scientific community and there are still challenges are to go. The study of diffusivity controlled and solubility controlled mechanism and choice of suitable polymers for different gas phase applications is necessary to understand the phenomena. The transport properties of the porous composite, catalytic beads, and ceramic composite are very important in physics, material science, and chemical engineering. In the last few years, interests was increased enormously to understand the electrical, particle, ion transport in newly synthesized composites materials.

This book review about the basic preparations, morphological, thermomechanical, diffusion and transport properties of different types of the ceramic composite, hybrid composite, nanocomposite, conducting polymer composite, epoxy composite, thermoset polymer composite graphene composite, other nanocarbon composite materials, and their diverse applications.