Dedicated to

All my teachers and those who helped me to unravel some of the secrets of the Science and Technology of Polyurethanes and their scientific exploitation for human progress
Polyurethanes are one of the most useful and extremely versatile synthetic polymer systems known to mankind. The science and technology of polyurethanes is an exciting field where research has been going on for last several decades and still continuing. Certain unique polyols and several polyurethane systems having distinctive characteristics have been studied here. A large number of experiments have been conducted involving multitudes of formulations and processes from which interesting results have been obtained. Energy absorbing and damping characteristics of some of these polymeric systems have been most revealing. Effects of different reactants and additives, polymerisation and foaming processes on the product have been thoroughly analysed. Polyurethane foam and elastomer technology and its production involve several complex variables, which are interdependent. Hence, the influence of each variable on the polymer and foam has been studied and also examined by means of regression analysis and response surface methodology techniques. Effects of different processing variables like mixing, packing factor and others have also been investigated. All these studies and analysis have revealed the exceptional properties of many different types of flexible, rigid and semi-rigid polyurethane foams and elastomers based on certain unique polyols and their blends. It is hoped that the studies conducted in this research work will definitely enhance the understanding of the science and technology of polyurethane polymeric systems.