PREFACE

With the enormous development in science, the present century has made immense progress in the field of pharmaceutical technology. This resulted in the emergence of more sophisticated dosage forms like tablets, capsules, parenteral products etc. which superseded the crude dosage forms like galenicals, infusions, decoctions etc. the curiosity and quest of human being have explored even his own physiological and anatomical network. In order to prevent and cure diseases, man has developed new medicines and newer dosage forms and has also made the drug therapy more rational.

For better understanding of pharmacokinetic and pharmacodynamic parameters, the present day drug therapy is based on the delivery of adequate amount of drug in the body or to the target organ to elicit the therapeutic responses and to maintain this level over a desired period of time. This concept of drug delivery, which has been explored over the last three decades, is popularly called Novel Drug Delivery Systems (NDDS). Among the various techniques and technologies which are studied

academically, the Microparticulate Drug Delivery Systems (MDDS) were found to be most economical and industrially feasible. These delivery systems are excellent means of delivering any drug in a controlled and desired manner into the systemic circulation thereby achieving sufficient therapeutic plasma level and sustaining therapeutic activity over a desired period of time. Therefore, the micropelletization technology has been taken up by the author in his research program to achieve the maximum benefits of the NDDS.

In recent times the pharmaceutical industries are governed by the good corporate governance which demands the implementation of Safety, Health and Environment (SHE). As per the guidelines of SHE, any manufacturing scale-up technology has to use safe method of preparation of a product on a large scale. Keeping these guidelines in mind the author wanted to develop a process of producing micropelleted systems in a completely aqueous environment. The process which was researched upon, completely avoided use of any toxic and hazardous organic solvents. This was achieved by using a suitably optimized ionotropic gelation technique. A potent diuretic drug, Frusemide, was selected as a model drug for the entire research work. Microspheres, which were

produced by the above technique would help to deliver the drug at a controlled rate into the systemic circulation and would increase its' therapeutic efficacy while simultaneously minimizing its' adverse effects.

The thesis has been divided into twelve (12) well- defined chapters with a final summary and conclusion. At the end of each chapter, the necessary references have been cited at appropriate places. The author has also adopted latest mathematical, statistical and computer supported systems to design, implement and evaluate the efficiency of the delivery system researched upon. The result of the study fulfils the goal of the investigation, since the organic solvents could be completely replaced by an aqueous system in producing microspheres thereby preventing the ecosystem. It is thus felt, that the findings of the research work can add up new knowledge in the field of microparticulate drug delivery systems by ushering new light on the existing information available on the subject of the study.