

## ACKNOWLEDGEMENT

I feel great pleasure in submitting the thesis. I wish to express my warm and heartfelt gratitude to all those who have helped me throughout my work. First of all I am thankful to God for giving me strength and courage to do this work.

It is my greatest pleasure and pleasant duty to express my sincere and grateful thanks to my supervisor Prof. D. K. Kanchan for his inspiring guidance, constant encouragement and support throughout the course of this research work. His enthusiasm, inspiration, observations and comments helped me a lot in shaping the present work. He has provided me an exposure to the field of solid state ionics, good teaching and many good ideas. I am indebted to him for his affection and help in all aspects of my work over the last four years. The overall training given by him in all aspects has provided me a lot of confidence to tackle any research and development problem.

I also feel privileged to acknowledge Prof. C. F. Desai, former head and coordinator DRS Phase III for providing necessary laboratory facilities in the department throughout the tenure of the research work.

I also gratefully acknowledge to all the teaching staff and non teaching staff of physics department of The M. S. University for their help and cooperation.

I would like to thank, Dr. A. M. Awasthi and Mr. S. Bharadwaj of IUC-DAEF, Indore for providing me the facilities to carry out DSC analysis of my samples.

I also thank Dr. Sripathi and Mr. U. Deshpande of IUC-DAEF, Indore for FTIR study of my samples.

I am extremely grateful to Dr. Anshuman Dalvi, Associate professor, BITS, Pliani for his constructive suggestions and providing the facility for transport number measurement.

It is my pleasure to extend sincere thanks to my senior research colleagues Dr. H. R. Panchal and Dr. K. P. Padmasree for initiating me in to the preparatory techniques and helping me unreservedly at various stages of my research work. I am also thankful to my present research colleagues of solid state ionics laboratory Poonam, Manish and Nirali for providing me a friendly and cooperative atmosphere throughout this endeavor.

A big thank to Mrs. Kashmira Doshi for taking care of my daughter in their creche and making me comfortable and stress free during my work. I have no words to say thanks to my daughter Kamakshi Pant. Although she has not helped me in my experimental work but during my stay in Baroda for four years, she really made my work much easier because of her adjusting nature.

I extend heartfelt thanks to my brother Rahul and sisters Manisha, Bhawna and Richa for their constant support and encouraging me to utilize time and opportunities. I also thank my In-laws Mr. & Mrs. Harish Chandra Pant and my brothers-in-law Jagdish, Saurabh and Manoj for their unquestioning support and encouragement.

Thanks are also due to Mr. & Mrs. Kirti Prakash Gupta. They made my stay at Pilani as homely. I also thank them for their cooperation and encouragement.

A mere mention of acknowledgement is on these pages is not sufficient when I think of blessings, untiring and immeasurable encouragement provided by my beloved parents Mr. Madan Mohan Kandpal and Mrs. Kamla Kandpal at

every stage. Without their care, concern, encouragement and sacrifice it would have been impossible for me to accomplish this work. Last but not least, I wish to thank my husband Mr. Deepak Pant whose constant encouragement and untiring support was instrumental in completing and submitting this work.

Meenakshi Pant