ACKNOWLEDGEMENTS

It gives me a great pleasure, in expressing the deepest sense of gratitude towards my guide, Dr. A.D. Shaligram. He not only made useful suggestions and critical comments during the course of the work, but also helped in formulating the right approach to solve many problems. His foresight lead the work to a success.

I am deeply grateful to the Head, Department of Electronic Science, Prof. S.V. Ghaisas for, invaluable suggestions from time to time and providing the necessary facilities. I would like to acknowledge the keen interest and invaluable suggestions by former Head, Prof. S.K. David.

I am obliged to Prof. Madhusudana, Head Liquid crystal division, Raman Research Institute, Bangalore for providing access to the facilities in Raman Research Institute as and when necessary. I am also thankful to him for his fruitful discussions on several occasions. I am thankful to Dr. Ruckmongathan from Raman Research Institute, for his keen interest and valuable suggestions which helped in keeping the pace of the work. I am indebted to Mrs. Sarala and Mr. Sheshachala from Raman Research Institute for their collaboration in the work. The rigorous experimentation would not have been possible without their active participation. I am also thankful to Mr. Ram and Subramaniyam from Raman Research Institute, for their technical help.

I wish to express my deep sense of gratitude towards Prof. T. Goto and Dr. M. Mori from Department of Quantum Engineering, Nagoya University, Japan for broadening my outlook towards research.

I am thankful to Dr. Damayanti Gharpure for providing many stimulating discussions for preparation of this thesis. I also thank her for carefully going through the manuscript inspite of her tight schedule. I am also thankful to Prof. Ms. S.A. Gangal, Dr. Deuskar and Dr. Phatak for their encouragement and suggestions.

I take this opportunity to express my gratitude to Bipin Singh, Revati Kulkarni, Ashwani Harakara and Dr. Nitin Kulkarni for excellent co-operation during the work and the invaluable discussions, which have greatly contributed in understanding the subject. I enjoyed working with them.
It gives me a great pleasure to acknowledge the help given by Umesh Hivarkar, Sandeep Kulkarni, S. Joshi, Gangurde, Jadhav, Madhukar Zambare, Suresh Gosavi, Mohit Kapoor, Sontakke, Sonawane.

I am indebted to my husband Bipin Singh for not only providing valuable discussions and suggestions but also for the constant encouragement and moral support.

I would like to thank Shenavi, Rajashree, Shingare, Bhalekar, Kandhare, Amar, Surekha, Sangeeta, Savita, Sonawane.

I am grateful to my parents and in laws and other family members for their patience and moral support. Their enthusiasm has been a source of inspiration throughout the work.

Finally I would like to thank Mr. Roopesh Maral and Mr. Nitin Deshmukh who worked hard to bring the thesis to a presentable form.

I take this opportunity to dedicate this work to my parents and husband.

SUSHILA SINGH