ACKNOWLEDGEMENT

It gives me great pleasure in expressing my deep gratitude to Dr. C. F. Desai, Professor, Physics Department, Faculty of Science, M. S. University of Baroda, whose consistent guidance and inspiration have enabled me to pursue the research work with sustained interest and enthusiasm.

I sincerely acknowledge the co-operation rendered by Dr. Noureddine Melikechi, Technical Director, Applied Optics Center of Delaware and Associate Professor of Physics at Delaware State University, USA, by granting me an access to the Laser facilities of his laboratory and guiding me in the non-linear optical studies.

I would like to express my gratitude to Dr. Aristides Marcano, Investigador Titular, Venezuelan Institute for Scientific Research, Venezuela, for his assistance, guidance and help in the thermal lensing spectroscopy and Z-scan work.

It is my privilege to take this opportunity to express my sincere gratitude for the inexhaustible encouragement and moral support given to me by Dr. Sudhir B Trivedi, Director of Research & Development, Brimrose Corporation of America, USA.

I thank Prof. D. R. S. Somayajulu, Head, Physics Department, Faculty of Science, M. S. University of Baroda, for providing the necessary laboratory facilities under the DRS Programme (UGC, New Delhi).

I am thankful to Prof. G. R. Pandya, Physics Department, Faculty of Science, M. S. University of Baroda, for useful discussions and suggestions during the work. Several faculty members at the Physics Department, Faculty of Science, M. S. University of Baroda, have been a source of encouragement to me during my doctorate work. These individuals include Dr. R. C. Shah, Prof. S. R. Pandya, Dr. J. S. Bandukwala,

Dr. A. K. Nehate, Prof. N. L. Kekan, Dr. P. W. Deshpande and Dr. M. N. Srinivas. The kind co-operation and technical help by the Technical Staff, Central Workshop, Faculty of Science, M. S. University of Baroda, is gratefully acknowledged.

I am highly obliged to Dr. Gabriel Gwanmesia, Professor, Physics Department, Delaware State University, USA, for his help in initiating the optical studies. I am thankful to Dr. Kraig Wheeler, Associate Professor, Chemistry Department, Delaware State University, for allowing an access to his laboratory. I am also thankful to Dr. Muktha Hendi, Chemistry Department, Delaware State University, for useful discussions and suggestions during the work.

I appreciate the co-operation rendered by my colleagues, Jermille Danclar and Curtis Loper at the Applied Optics Center of Delaware, Delaware State University, USA.

I am very much fortunate lucky to have a family that has constantly encouraged me during my research work. Particularly, I am highly grateful to my sister. Mrs. Maya Dighe and my brother-in-law, Mr. Sanjay Dighe who helped me in preparation of the thesis. I am thankful to my sister, Mrs. Shaila Pradhan, and my brother-in-law, Mr. Dilip Pradhan, for their assistance in the formative stages of my career.

I could not have come this far without the admirable upbringing of my parents, Mr. S. V. Gupte and Mrs. Malti Gupte. I received unfaltering encouragement from my father during these years. I greatly appreciate the moral support of my parents-in-law, Mrs. Chhaya Pradhan and Dr. Dinkar Pradhan.

I gratefully wish to record the moral support given by Mrs. Pramila Kaza and Mr. Krishna Kaza, in Dover, Delaware, USA. My cheerful friends, Ms. Yu Jiang and Mr. John Matthews, have had their share in my encouragement.

Last but not the least, I am extremely indebted to my husband, Dr. Ranjit Pradhan, for his brilliant assistance and help in the non-linear optical work. His inexhaustible encouragement made it possible for me to traverse the concluding phase of my doctorate work.

(Sonal S. Gupte)