ACKNOWLEDGEMENT

I shall always remain greatful to Dr. K.P. DHAKE, M.Sc., Ph.D., F.U.S.I., Reader, Applied Physics F.A.S.I., F.I.C.S., Department, Faculty of Technology and Engineering, M.S. University of Baroda, BARODA for the constant encouragement and also providing quidance throughout me investigations. Without his able guidance, this thesis would not have seen the light of day.

I am extremely thankful to Prof. V.N. Potbhare, Head, Applied Physics Department, for the valuable discussions during the work, Prof. T.R. Joshi, Ex-Head, Applied Physics Department, Prof. Deepakkumar De, Dean, Faculty of Technology and Engineering, for providing the necessary laboratory facilities as well as the opportunity to carry out my work.

I am thankful to Dr. A.K. Nehate, Dr. D.P. Bharambe and Dr. R. Manmohan for the encouragement given to me during my stay in Baroda.

The help provided by Mr. Ravindra Patil and Mr. Prashant Supe was simply invaluable.

My sincere thanks to Dr.Ajjeh Faisal, Dr. Neera, Dr.Ramnik Tandel, Mr. P.D. Patil, Mr. K.C. Wilson. Mr.P.N. Vashi and the wonderful couple Rathin and Kukkoo Mukherjee, Ms. Mangla Joshi and Mr. Nareshbhai Shah for help and company during the work.

I am greateful to Mr. Ghanshyambhai Patel for typing this thesis in the shortest interval and to Mr. Sudhakar More for Diagram and Binding in record time.

I am indebted to my friends Prdeep, Shekhar, Vijay and Sunil for their kind affection and creating the stimulating enviornment during my stay here.

I owe greatfulness to my parent, aunt Mrs. Kalpana, My wife Saujanya and My son Saurabh.

I also thank Cuncil of Scientific and Industrial Research (C.S.I.R.) for awarding me Junior and Senior Research Fellowship (JRF & SRF).

SUDHIR N. PATIL