

ACKNOWLEDGEMENTS

On the day of completion of this thesis, the numerous memories are being rushed in my mind with full of gratitude to those who encouraged and helped me a lot at various stages of this work. I offer sincere gratitude to all of them.

I have great pleasure to express my deep sense of indebtedness and heartfelt gratitude to Prof. S.H. PAWAR, my research guide for his expert and valuable guidance and continuous encouragement given to me during the course of my work. In spite of his busy schedules, he was kind enough to give me time for discussion of my work.

I am highly grateful to Prof. K.L. NARAYAN, Head, Department of Physics of this University for making available laboratory facilities and constant encouragement.

I would like to thank the research colleagues, Mr.T.R. Bhosale, Mr.L.D. Naikaware, Mr. M.J. Ubale, Mr. S.B. Kulkarni, Mr. B.L. Chavan, Mrs.T.S. Desai, Mrs. P. N. Pawaskar for their help during this work. I am also thankful to Mr. P.S. Hilage for the help in microstructure study. I am also thankful to all teaching and non-teaching staff of the Physics Department, Shivaji University, Kolhapur for their constant encouragement and help. I am also thankful

to staff of USIC for preparing glass instruments and XRD patterns of the samples.

I would like to thank University Grant Commission, New Delhi for award of a teacher fellowship.

I am very much thankful to Hon'ble Dadasaheb Ramrao Patil, Founder, Abasaheb Suresh Ramrao Patil, Chairman, Vidya Vikas Mandal, Sakri (Dhule) and Dr. P.D. Deore, Principal, S.G. Patil College, Sakri (Dhule) for grant of study leave and constant encouragement. I am also very much thankful to Bapusaheb B.N. Bhamare, Former Principal and at present, Secretary, S.G. Patil College, Sakri (Dhule) for his constant encouragement.

I am thankful to Shri. B.K. Bagul, Head, Physics Department, S.G. Patil College, Sakri (Dhule) and my other colleagues for fruitful discussions. I am also thankful to Shri.A.S. Patel, Head, Mathematics Department, S.G. Patil College, Sakri (Dhule), at present he is Teacher Fellow in Mathematics Department, Shivaji University Kolhapur, for the help during this work. I am also thankful to all teaching and non-teaching staff of the college.

The expert and neat typing of the thesis with meticulous care by Mr. Satish Anekar of Computer Services, Kolhapur is much appreciated.

I would like to remember my brother Shri. A.D. Pawar, Teacher, Municipal High School Malegaon (Nasik), who has supported me in every stage of my life. My deep thanks and appreciation are reserved to my Mother whose goodwill and inspiration far exceeds what the words of appreciation can express.

I express deep sense of gratitude to my Wife Sou. Jayashri, Son. Nikhil and daughter Prajaktta who are source of my encouragement.

Kolhapur.

Prakash.D. Pawar

Date :