ACKNOWLEDGEMENT

I express my sincere thanks and regards to my guide Prof. J.K. Zope, Department of Physics, Shivaji University, Kolhapur, for his valuable guidance and constant encouragement throughout the course of this work. The successful completion of this work is entirely due to his able guidance.

My sincere thanks to Prof. R.N.Patil, Head of Physics
Department, Shivaji University, Kolhapur, for providing
Laboratory facilities and valuable suggestions.

I am thankful to Dr.V.L.Mahajan, and the staff of glass blowing section, Dr.K.S.Venkateswarlu, Dr. Deshpande and staff of Water Chemistry Division, BARC, Bombay, for their help in vacuum sealing, XRD, DSC of our samples. The experimental assistance and discussion with B.D.Murgi and A.B.Gadkari is gratefully acknowledged.

I am grateful to Secretary, Dayanand Education Society and Principal and Head of Physics Dept.(Latur) for giving me an opportunity by deputation. I am also thankful to U.G.C. New Delhi, for awarding the Teacher fellowship.

I extend my thanks to the non-teaching staff of the Physics Department, Shivaji University, for their help

during this work. I am thankful to Miss Rokade for typing of the manuscript neatly and correctly and Shri Gosavi who helped at the last minute.

I take this opportunity to express my deep feelings towards my wife Mrs. Lata Patil and other family members, who have relieved me from household difficulties, throughout the year and also constantly encouraged me to fulfil this task.

Kolhapur

(V. G. Patil)

12 August 1987