

ACKNOWLEDGEMENT

This thesis would not have been possible without the inspiration and support of a number of wonderful individuals - my thanks and appreciation to all of them for being part of this journey and making this thesis possible.

Many thanks to Almighty God, for is it He who inspired starts this work in me and supply the hidden energy to completion. It is He who has blessed me with the people whose name I feel to mention here.

I wish to express my heartfelt thanks to my research supervisor, **Dr. S. Dawn Dharma Roy (guide)**, Retd. Principle, Nesamony Memorial Christian College Marthandam and **Dr. I. Hubert Joe (co-guide)**, Associate Professor, Centre for Molecular and Biophysics Research, Department of Physics, Mar Ivanios College, Thiruvananthapuram for his inspiration, invaluable guidance, suggestions, support, freedom and constructive co-operation to learn.

With deep sense of regards I express my thanks to **Dr. K. Paul Raj** (Principal) and **Dr. Sheela Christy** (Head of the Department of Physics), Nesamony Memorial Christian College, Marthandam for providing the necessary laboratory facilities and other institutional services for the research work.

I am indebted to my many research colleagues for providing a stimulating and fun filled environment. My thanks go in particular to **Dr. Manimaran D.** and **Dr. Leenaraj D. R.** with whom I started this work and many rounds of discussions on my research with them helped me a lot. I would also like to extend huge, warm thanks to research colleagues and my good friends, **Dr. Sabitha C., Mrs. Shyni V., Ms. Elizebath, Mrs. Veena Gopal S., Mr. Sreenath M. C., Mr. Chitrambalam S., Mrs. Aswathy S.V., Mrs. Nisha S. V. D., and Mrs. Liji John** for their valuable help and support during the course of work.

I will not forget the love, support and caring always shown by my small family. My heartfelt gratitude also goes to my beloved parents and in laws for their patience, words of support and their sincere prayers.

MEERA J. NATH