The thesis contains the results of investigations carried out mainly in the Department of Applied Physics, Calcutta University.

The author is immensely grateful to Prof. A. K. Sen Gupta, D.Sc., Head of the Department of Applied Physics, Calcutta University, for his valuable guidance and help throughout the progress of the work.

Thanks are due to Dr. G. Bandyopadhyay, M.Sc., D.Phil., and Prof. N. Kosevamurthy, B.E., M.Sci. (Tech.), both of the Indian Institute of Technology, Kharagpur — for showing active interest in some part of this work.

Finally the author expresses gratitude to his colleagues and friends in the Department of Applied Physics for their co-operation in connection with this work.

Author