

ACKNOWLEDGEMENT

I would like to thank my supervisor **Dr. S. Renganathan**, Professor, Centre for Biotechnology, A.C.Tech campus, Anna University for his excellent guidance and constant support throughout my research program. Your advice on both research as well as on my career have been priceless.

I express sincere thanks to the **Dr. S. Sivanesan**, Dean, Department of Chemical Engineering for the support during the research program. I express my heartfelt thanks to **Dr. P. Gautam**, Director, Centre for Biotechnology, Anna University, Chennai for his valuable suggestions during the research program. I would like to thank **Dr. N. Balasubramanian**, Professor and Head, Department of Chemical Engineering, for providing the necessary infrastructural facilities throughout the research investigation.

I also take this opportunity to thank my doctoral committee members **Dr. G. Vijaiyan Siva**, Assistant Professor, Department of Biotechnology, University of Madras, Chennai and **Dr. N. Nagendra Gandhi**, Professor, Department of Chemical Engineering, Anna University, Chennai for their constructive suggestions. Life at Anna University would have not been the same without my friends Saranya Sree AP and Vanitha M.

A special thanks to my ever loving parents **Mr. J. Sureshan**, **Mrs. P. Bharathy Sureshan**, dearest brother **Er. S. Kumaran**, and my family members for their unconditional love, prayers and their belief in all my efforts. Words cannot express how grateful I am to my family. Finally I wish to thank God almighty for making it possible to successfully complete this research work.

SHIYAMALA DEVI S