ACKNOWLEDGEMENTS

I would like to thank all people who have helped and inspired me throughout the course of this thesis. I would first like to thank my advisor, Professor U.S. Shivhare, for unlimited support and advice. Dr. Shivhare gave me enough space for conducting the research in an independent way and assistance when I asked for it. His thoughtful and creative ideas were essential for the present work, and his expertise in writing was extremely important for giving a proper shape of this thesis. He was always there for me.

Additionally, there are several people who were also essential to the success of this work. I am indebted to Professor Tejvir Singh from Chemistry Department, Panjab University for his valuable discussions and support on FTIR studies and chemistry aspect of this work.

I am thankful to Dr. Vijender Beniwal of Department of Pharmaceutics, National Institute of Pharmaceutical Education and Research (NIPER), who provided tremendous support in carrying out the rheological experiments.

Professor U.C. Banerjee of NIPER helped me for using the dynamic rheometer in NIPER. I will always remain grateful for his kind help when I was not so optimistic about the experiments.

I would also like to thank several people for support and assistance with various aspects of this thesis. These include: Dr. R.R.B. Singh (National Dairy Research Institute (NDRI), Karnal) for allowing me to use Hunter colorimeter in his lab and for illuminating discussions and valuable advice. I am indebted to Dr. Singh for using his precious times to read this thesis and gave his critical comments about it. I am grateful to Dr. A.K. Singh and Dr. Sumit Arora of NDRI for providing me artificial sweeteners and giving their valuable advice on artificial sweeteners. I am also thankful to Dr. Ruplal Chaudhuri for explaining me the computational methods of principal component analysis in Unscrambler package. I would also like to thank Dr. G.S.S. Saini from Physics Department, Panjab University for his help in understanding the usage of the spectral softwares like GRAMS and ORIGIN. I am thankful to Dilip Shah (research scholar) and Dr. Archana Bhatnagar of Biochemistry Department, and Dr. Amit Bhatia of Pharmacy Department, Panjab University for lyophilisation of samples for SEM study. All of them have helped and broadened my perspective on research. Thank you all!

I would also like to thank Gargi Ghoshal and Shalini Gaur as my colleague and ex-lab mate respectively for the last five years. They have helped me immensely in handling scientific instruments and with common lab problems during the long hours in the lab. It
was almost impossible to complete the work without their help in practical, scientific and other matters.

My sincere thanks are due to Dr. V.K. Rattan, Chairperson, University Institute of Chemical Engineering & Technology (UICET), Panjab University (P.U.), Chandigarh for providing all the necessary facilities in the institute. Also, I wish to express thankfulness to my colleagues of Chemical Engineering at P.U. for their kind support. I am grateful to every non-teaching staff of UICET, who have helped me immensely with scientific instruments and daily life. I want to acknowledge in particular: Yashpal Sharma, Ajay Bharadwaj, Manu Ram and Anil Kumar. I am thankful to Rikhi Chand and Mohinder Singh of Central Instrumentation Lab (CIL), Panjab University, Chandigarh for their technical support in conducting FTIR and Scanning Electron Microscopy respectively.

Finally, thanks to my friends and family. I am very grateful to my friends in Chandigarh: Lallan Singh Baghel, Harjinder Singh, Manoj Tiwari, Debarshi Das, Janaki Srinivasan, Deepak Kumar Singh, Pampa Mukherjee, Jyotirmoy Khatri, Anil Thakur, Daljit Ami, Kumool Abbi and many others who helped whenever I needed them. I will be always grateful to Chetan Premani and Anirban Roy Choudhury of Institute of Microbial Technology (IMTECH), Chandigarh for sending the journal papers by email whenever I asked them. I was fortunate to have met a group of wonderful friends who have listened, advised, tutored, supported and encouraged me. I can not imagine a better group of friends with whom to have endured the challenges of the last 5 years; they have made the bad times better and the good times unforgettable.

My deepest gratitude goes to my family for their love and support throughout my life; this dissertation is simply impossible without them. I am indebted to my parents, sister, brother in law, and, nephew Bujan. I also gratefully acknowledge the help of my brother in law (Dr. Tirtha Kumar Datta) for successful completion of this work. Thank you for all the support and encouragement.

Finally, I would like to thank everybody who was important to the successful realization of thesis, as well as expressing my apology that I could not mention personally one by one.

SANTANU BASU

\[13/10/05\]