Acknowledgement

I would like to acknowledge my research guide, Dr. Rajiv Kumar for his valuable support and guidance to my research. He has been a constant source of inspiration to me during my stay at NCL. His enthusiastic attitude, innovative ideas and scientific knowledge have inspired me profoundly. It has been an intellectually stimulating and rewarding experience to work with him. I truly feel privileged to have joined his research group.

I am grateful to the Council of Scientific and Industrial Research (CSIR), India for the research fellowship. I am thankful to Dr. S. Sivaram, Director, NCL for allowing me to carry out research work and extending me all the possible infra-structural facilities from time to time in this institute of repute.

I wish to express my sincere gratitude to Dr. A. P. Singh, Dr. R. M. Deshpande, Dr. V. H. Rane, Dr. A. K. Kinage and Dr. R. V. Chaudhari for their constant encouragement, motivation, guidance and fruitful discussion both in professional as well as personal level. My sincere thanks are due to Dr. S. Sivasanker, Dr. N. M. Gupta, Dr. M. K. Dongre, Dr. S. B. Umbarkar, Dr. C. Gopinathan, Dr. D. Srinivas, Dr. S. A. Pardhe, Dr. C. V. V. Satyanarayana, Dr. H. B. Haligudi, Dr. P. Manikandan, Dr. (Mrs.) Deshpande, Dr. P. N. Joshi, Dr. M. W. Kasture, Dr. A. J. Chandawadkar, Dr. C. V. Rode, Dr. Amit Dubey, Violet madam, Jha and all other scientific and non-scientific staff of Catalysis Division for their help and encouragement.

It gives me great pleasure to thank my labmates, Dr. Subhash, Dr. Mandal, Dr. Anirban, Dr. Satyajyoti, Mahesh, Pranjal, Sonu, Bimu, Atul, Ramakant, Pravin, Puja for their constant help, encouragement and the nice time I had with them. Special thanks to Makrand, Didgikar, Kapil, Vikas, Jayprakash, Parag, Sunil, Yogesh, Manisha, Sagar, Sangeeta, Savita, Bibhas, Debu, Nandu, Anamika, Sunil Shinde, Nittin, Abhishek, Shashi, Shailesh, Arvind, Kulkarni, Sandeep, Viplad, Samadhan,
Rajamani, Nitasha, Kusum, Anand, Sachin, Ambrish, Atul, Manish, Anish, Nitin, 
Nagraj, Sushim, Sarvesh, Sameer, Arun, Shiv, Priti, Rohit, Sankar, Ankush, Sachin, 
Prashant, Upendra, Lakshmi, Maitri, Pallavi, Deu, Rajendra, Shanbag, Shrikant, 
Surendran, Chidambaram, Shylesh, Balasaheb, Vandana, Purabi, Sheetal, Tejas, 
Prashant, Jaheen, Sonali, Purushotamma, Madhu, Haribahu, Kishor and all other 
research scholars in NCL who are not named in person, for their valuable suggestions 
and helping hand.

I would like to express my deep gratitude to my friends Prasad, Nilesh, Nitin, 
Dipak, Ramakant, Kiran, Ravi, Prashant, Sandeep, Umesh, Shyam, Sachin, Mahajan, 
Dinesh, Pankaj, Mukesh, Chandrakant, Suhas, Swapnil, Nikhil, Anil, Leena, Seema, 
Jyoti, Mona, Shubhangi for their affection.

It also expresses my sincere gratitude to Prof. Gujrathi, Late Dr. H. B. 
Chaudhari, Dr. U. L. Phalak, Dr. V. S. Zope for their guidance, support during my stay 
in college.

It gives me great pleasure to thanks Aai, Pappa, Dada, Tai for their love, unfailing 
support, trust, tremendous patience they have shown in me during my long period of 
studies. They have been my constant source of strength and determination and have 
brought a great deal of happiness to my life.

Amit Arvind Deshmukh