

Acknowledgements

First and foremost, I want to put forward my sincerest gratitude to my supervisor **Dr. Karunakar Kar**, who has supported me throughout my research work with his immense knowledge, vision and enthusiasm towards research, motivation, guidance and patience. He always encouraged me when I met with difficulties and praised me when I made accomplishments. I thank him for giving me all the interesting projects to work with and also to make me understand the real meaning of research. I am very grateful to be his student.

I would like to express my deepest gratitude to **Dr. George K. J.** for his unconditional support, care and encouragement in every aspect along the way. I would also like to thank the members of my committee **Dr. Samanwita Pal, Dr. Ganesh Bagler, Dr. Ambesh Dixit, Dr. Meenu Chhabra, Dr. Satyajit Sahu and Dr. Rakesh Sharma** for providing many valuable comments that helped me to improve the contents of this thesis. I am highly grateful to all the faculty members and staff members who directly or indirectly motivated and encouraged me.

I am also very thankful to **Dr. Balaraman Madhan, Dr. Hemant Daima, Dr. Mayur Temgire, Sathiamurthi Perumal, P. N. Navya and Rahul Badhwar** for providing experimental support to carry out specific studies and also for their valuable suggestions that helped in accomplishing the experimental tasks.

Unforgettably, I am extremely thankful to all my friends, especially **Shraddha, Jyoti, Hargeet, Chandni, Astha, Prachi, Medhavi, Neha, Shailu, Bibin and Dolat** for always standing by me through all thick and thin.

Moreover, I would like to take this opportunity to pay my deepest gratitude towards **my in-laws, parents, brother and sister-in-law** for their unconditional support, motivation and understanding to make this thesis possible. Last, but not the least, I am very grateful to my husband, **Mr. Harsh Sharma**, for being extremely concerned and understanding. Without his encouragement, patience and support it would be impossible for me to complete this journey of research so far.

Kriti Dubey Sharma
PhD Student

...

