## ACKNOWLEDGEMENT

First and foremost, from the core of my heart I would like to pay homage and tribute to, and salute the great soul of **Mahamana Pandit Madan Mohan Malviya ji**, the revered founder of this beautiful temple of learning. His divine figure has always remained a source of courage, inspiration and motivation, a guiding light and a supreme example of patriotism and willpower in the form of Banaras Hindu University (BHU).

I wish to express my appreciation to my esteemed supervisor **Prof. Ashok Kumar Verma**, not only for his indispensable guidance, support and encouragement related to this thesis work but also for helping me develop a new outlook to this profession I thank him for his unselfish alacrity help to make this journey a very pleasant and personally rewarding one. I express my sincere thanks to my RPEC members Prof. Satya Vir Singh of Department of Chemical Engineering & Technology and Prof. Subir Kundu of School of Biochemical Engineering for their continuous support and erudite advice to strengthen me in this field.

I express my deep sense of gratitude to **Prof. Pradeep Kumar Mishra**, Head of Department of Chemical Engineering & Technology, IIT (BHU), Varanasi and former Head of Department **Prof. A. S. K. Sinha** for providing necessary facilities, guidance and encouragement during the course. I would like to thank all DPGC members, faculties and other staffs of the department for helping me in my dissertation work.

I would like to thank my lab mates **Neha Agarwal**, **Livingstone P George**, **Juhi Singh** and **Sonam Balani** for the useful discussions in all steps of research, software learning and creating pressure free atmosphere in the laboratory during the course of time. I feel lacunae of words to express my most heartfelt and cordial thanks to my friends **Laxmi Deepak**, **V. Raghunath**, **Arvind Singh**, **Amit Singh**, **Ganesh Dutta Mishra**, **Geetika** 

Sonkar, Poornima Pandey, Meghna Kapur, Dan Bahadur Pal, Amit Rathour,

Dinesh Yadav, Umesh Pratap Singh, Naveen Kumar and who have always been a

source of inspiration for me and who stood by my side at the toughest times during the

stay in Varanasi. Many thanks go also to my native friends Ashutosh Mishra,

Chandra Kant Das, Mukesh Singh, Pramod Nayak, Sandeep Sahu, Premanand

Sahu, Biswakant Pradhan, Satyanjay Sahoo, Satya Ranjan Behera and Pradyumna

**Sahu** for encouraging me throughout my life and making it smooth.

I always remain thank full and indebted to my **family** for their love, blessings and care.

They provided me the strength and determination to constantly improve myself and

achieve my goals. Without them, this would not have been possible.

I wish to extend a warm thank all those who could not find a separate name but have

helped directly and indirectly. Thank you all.

Finally, I thank almighty Lord Jagannath and Baba Vishwanath for giving me strength

to face all the fate of life.

Date:

Varanasi

(Chandradhwaj Nayak)

(vi)