## Acknowledgments

## 

It gives me great pleasure in expressing my gratitude to all the helping hand who have supported me and had their contributions in making this thesis possible. First and foremost, I must acknowledge and thank The Almighty for blessing and guiding me throughout this period. I could never have accomplished this without the grace of Almighty God and the blessings of people around me.

I express my immense gratitude to my supervisors *Dr. D. K. Kanchan*, Department of Physics, The Maharaja Sayajirao University of Baroda for their invaluable guidance, motivation, and encouragement to complete this thesis work. His inspirational guidance, continuous encouragement, and support throughout have helped me a lot to carry out my research work and achieve the necessary skills to be a successful researcher. It is an honor to have worked under his guidance. Their constant support and constructive suggestions always helped me stay on the right track of my thesis work

I express my thankfulness to the former heads and *Prof. S. Mukharjee*, the current head of the Department of Physics, Faculty of Science, The M.S. University of Baroda for availing me all the departmental facilities during my Ph.D. course. I am extremely grateful to all the respected faculty members and staff in the Department of Physics for the assistance in my Ph.D. work. I am highly indebted to them for being there. I am thankful to other members of the department also for helping me as and when needed.

I am very thankful to all my senior researchers *Dr. Poonam Sharma*, *Dr. Nirali Gondaliya*, *Dr. Manish Jayswal*, *Dr. Dharmesh Kothari*, *Dr. Prajkta Joge*, and lab mates *Ms. Gargi Dave*, *Mr. C. Maheshwaran*, and *Ms. Vaishali Adhwaryu* for their continued help and valuable suggestions during the period of research work. The excellent help and co-operation received from them provided a platform of knowledge. I am also thankful to *Ms. Apeksha Patel* and *Ms. Shilpa Bhavsar* for their help and encouragement.

I am very grateful to *Dr. Nidhi Astik* for their valuable support during the tough and good times of this memorable journey.

I sincerely express my deep sense of gratitude to the former HOD. *Dr. Rakesh S. Patel*, Applied Science and Humanities Department, SVIT, Vasad for their valuable support. I would like to express my sincere gratitude to all the faculty members of the Applied Sciences and Humanities Department, SVIT, Vasad for their support.

The love, affection and undoubted support provided by my mother *Mrs. Lataben Gohel* were a source of constant motivation to reach up to this stage in my life. My mother has been a strong force to inhibit strength and toughness in me. I also wish to thank other members of my family for providing encouragement and support which made it possible to complete my thesis work without any hindrance.

I am also indebted to my college-time friends *Dr. Snehal Jani* and *Mr. Preeth Padmnabhan* for their encouragement throughout my research that developed a keen interest in my research work.

I am deeply indebted to my friends and colleagues *Dr. Bharti Nathwani* and *Dr. Avani Patel* for their continuous support in my Ph.D. study through her motivation, enthusiasm, and immense knowledge in the subject.

I also extend my heartiest thanks to *Dr. Deepak Kumar* and *Dr. Mitesh Patel* for sharing their beautiful ideas and knowledge regarding my research work.

I would like to extend my sincere thanks to *Ms. Riddhi* from the Department of Chemistry, *Mr. Sandeep Kumar* from the Biochemistry department, and *Mr. Santosh* from the Microbiology department, MSU for helping me with my research work.

I am also extremely thankful to my entire well-wishers who have directly or indirectly helped me during the whole tenure of research work.

## Khushbu Gohel