

ACKNOWLEDGEMENTS

Every accomplishment starts with a decision to try

-John F. Kennedy

*Well, although the journey as research student began with a decision to try and achieve this dream. The accomplishment of this thesis was possible only due to the support of many wonderful people and I owe them my sincere thanks. I would first like to express a heartfelt gratitude to my research supervisor **Dr. Sonal Thakore**, Associate Professor at the Department of Chemistry, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara for her continuous support. She has been a constant source of motivation and advised me with her immense knowledge in the related research area. Her continuous suggestions, discussions and time management skills have helped me achieve my goals in stipulated timeline. I will be always grateful to her for teaching and counselling me not only for research but also for various aspects of career development during all these years of my PhD. The outcome of this thesis is a small dedication to her.*

*I am sincerely thankful to the Head, **Prof. Anjali Patel** and former Head, **Prof. Neelima Kulkarni**, Department of Chemistry, Faculty of Science, The Maharaja Sayajirao University of Baroda for providing the research facilities and support throughout my research work.*

I am extremely thankful to Solvay Research and Innovation Center, Savli, Vadodara, Gujarat, India for the financial, analytical and technical assistance throughout the course of this Ph.D. work. I am indebted to Dr. Soumyadeb Ghosh, Dr. Kaushey Patel and Dr. Gururajan Padmanabhan for their valuable technical suggestions, brain storming sessions and motivation.

I am very grateful to Dr. Gunjan Verma and Dr. V.K. Aswal, Bhabha Atomic Research Center, Mumbai for the guidance in variable temperature DLS and magnetic hyperthermia studies. I am also thankful to the Sophisticated Analytical Instrument Facility, IIT Bombay and Chennai for HRTEM-EDAX, FESEM and VSM analysis respectively. I thank CSIR-CLRI, Chennai for AFM analysis and Dr. Vandana Rao, Metallurgy Department, Faculty of Technology and Engineering, The M. S. University of Baroda, Vadodara for help in the SEM-EDX analysis.

I acknowledge DST-FIST, Department of Chemistry, Faculty of Science, The Maharaja Sayajirao University of Baroda for NMR instrumentation facility. I am grateful to the research scholars of departmental instrumentation committee who extended their help for carrying out various analytical characterizations FTIR, fluorescence spectroscopy and UV-vis Spectroscopy.

I specially thank Mrs. Revathi Ganeshan, Department of Chemistry, The M. S. University of Baroda, Vadodara, for her constant support through

this tenure. I am thankful to all teaching and nonteaching staff of the department, Mr. Rane, Mr. Rawal, Mr. Kalpesh and Mr. Vasant.

My special thanks to my present and former lab mates for their support and cooperation. I am especially grateful to Dr. Archana Solanki, for her valuable guidance and help with experiments during initial days of my research. It has been a fun filled learning experience while working in an enthusiastic lab environment with my lab-mates Falguni, Monika, Pratik and Harshil. The technical discussions over a cup of tea and at lunch break with Falguni will be missed.

I would like to acknowledge Apeksha Joshi, Ali Asgar Vohra and Dr. Ranjitsinh Devkar, Department of Zoology, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara, for in-vitro studies. I thank Dr. Sriram Seshadri and his team at the Institute of Science, Nirma University, Ahmedabad for in-vivo studies. I am thankful to Dr. Rajesh Singh, Department of Biochemistry, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara, for helping with fluorescence microscopy.

Words are not sufficient to thank my family for the role they played in this entire journey. First and foremost I would like to thank the two most important men in my life who are my pillars of strength. My father Mr. Mahadeb Das who taught me that future belongs to those who believe in the beauty of their dreams. My husband, Mr. Vikin Patel who made me realize that it is important to be persistent, stay positive

and enjoy the journey to achieve those dreams. This thesis is a small tribute to both of them.

*Next I would thank my mother, **Mrs. Nandita Das** my first teacher and an unending source of positivity during times of failure and despair. I am also thankful to my in-laws, **Dr. Vallabhbhai Patel** and **Mrs. Ramilaben Patel** for being supportive and taking pride in smallest of my achievements.*

*Siblings are the angels who lift you up when your wings forget to fly. I am blessed to have 4 such angels in my life. I thank my sister, **Sushmita** and sister-in-laws, **Nirali, Hetal and Dhara** who have always been there for me through thick and thin.*

I thank everybody else who knowingly or unknowingly helped me during the course of this research work; thereby making it a life time achievement for me.

Manita Das