ACKNOWLEDGEMENTS

During my study at Manonmaniam Sundaranar University, there were many people I would like to thank and their memories I would like to cherish.

First and foremost, I would like to take this chance to express my most sincere and respectful gratitude to my guide & advisor Dr. Pathinettam Padiyan. He took me as his Ph.D scholar and has been cultivating me as a professional and a person by relating and sharing his own experience and philosophy in the research phase in the form of anecdotes, stories and lessons learned. The questions aroused by him particularly before assigning the research work and while editing a research article were absolutely phenomenal. Moreover, I really appreciate the freedom he had granted in my work to a great extent on various inter-disciplinary topics and the sound academic advice he had provided based on his long term insightful perspective.

I take this opportunity to thank the Head of the Department, all the teaching and non-teaching faculties for their kind cooperation.

I would like to thank my senior most coworker Dr. D. Henry Raja for always being positive and encouraging towards me. I really walked along with his shadow and learnt majority of the research tricks, particularly the art of speaking fluent English with sound presentation skills. His attitude towards respecting everyone inside and outside the University campus was phenomenal, which modified my psychological attitude towards others to a great extend. I strongly appeal that, without his consistent support I would not have survived in this department even for a year.

I would also like to thank Dr. B. Sundarakannan for his consistent friendship. His valuable suggestions particularly while publishing my first article was fantastic.
Special thanks to Dr. E. Subramanian, Professor, Dept. of Chemistry for his remarkable suggestions, particularly for writing the research equations, as soon as the comments were dispatched from the Editor of Chemical Physics Letters.

I would like to thank R. T. Ananth Kumar, my senior co-worker who assisted me to join Ph.D course during tough situations and also for arranging accommodation at Gandhinagar.

I also wish to thank all my labmates and co-workers who are pursuing their Ph.D course under various faculties of this department.

Special thanks go to Dr. Ramesh Chandra and Mr. Akshay Ghoushal, Institute Instrumentation Centre, IIT, Roorkee for aquring TEM images. Without Mr. Akshay Ghoushal’s dedication in collecting TEM data this work would not have reached this milestone. I am also grateful to Mr. Samik Roy Moulik and Mr. Dipankar Roy, SAIF, S. N. Bose National institute for basic sciences, Kolkata, for their generous help and fast data dispatch towards HRTEM and VSM measurements. I also acknowledge SAIF, IIT, Chennai for VSM measurements.

I gratefully acknowledge Manonmaniam Sundaranar University for offering me University Stipendary Research Fellowship (USRF) Grant.

Finally, this Ph.D work is dedicated with words of affection to my entire family for always standing by me and supporting me selflessly, wholeheartedly and consistently in all my decisions. I also want to thank all of my friends who contributed significantly to bring my life till this day possible.

I love you all!  

(C. S. Biju)