ACKNOWLEDGEMENTS

First and foremost, I thank the GOD for showering his choicest blessings on me throughout my research work.

I express my sincere gratitude to my supervisor, Dr. D. Gopi, Assistant Professor of Chemistry and Additional Coordinator, Centre for Nanoscience and Nanotechnology, Periyar University, for his excellent guidance and great patience throughout the work. His great enthusiasm and extended knowledge in science have helped me a lot in my research endeavor. The diligence and exactitude in work have impressed me, and benefited me not only throughout the period of this thesis, but will also continue to do so in the future. Discussions with you always inspired me and helped me to improve the quality of my work. Also, I thank you for your encouragement throughout the years, which has given me courage to explore the scientific world.

With deep regards and profound respect, I express my deep sense of gratitude and indebtedness to Dr. L. Kavitha, Department of Physics, Periyar University and for her inspiring guidance, constructive criticism and valuable suggestion throughout my research work. It would have not been possible for me to bring out this thesis without her help and constant encouragement.

I would like to sincerely record my heartfelt thanks to our collaborator Prof. Dr. Jose Maria Ferreira, Centre for research in ceramic and composite materials (CICECO), University of Aveiro, Portugal for useful discussions.

I express my sincere thanks to Dr. V. Raj, Professor and Head, Department of Chemistry, Periyar University, Salem for his support. Also, I take this opportunity to sincerely acknowledge Indian Council of Medical Research (ICMR) for providing
financial assistance in the form of Senior Research Fellowship (SRF) which buttressed me to perform my work comfortably. I am bound to thank the members of teaching, non-teaching staff and other research scholars of the Department of Chemistry, Periyar University for being so supportive and helpful in every possible way throughout the research work.

I express my heart felt thanks to my dear seniors and colleagues for helping me in completing the thesis successfully by indulging their valuable time, efforts, and their valuable suggestions.

Finally, I wish to thank my beloved parents, brother & sister and their families without whose support and encouragement, I could never have reached this joyful moment.

(S. Nithiya)