Acknowledgement

When mind is full, words are scarce, true, when expressing gratitude to all those who have directly or indirectly involved in all walks of my research career.

I am highly indebted to my guide, Prof. S. Jayalekshmi; under whose supervision the work reported here became fruitful and invaluable. I am grateful to her for the support and excellent guidance throughout my research career. Her humble nature, simplicity, sincerity, the way she treats students are worthy to be followed in life. She is my friend, guide and philosopher in the true sense.

I am also thankful to the present Head of the department of Physics, Prof. B. Pradeep and the former Head Prof. M. R. Anantharaman, for extending all the necessary facilities. Thanks are also due to Prof. V. C. Kuriakose, the doctoral committee member and my teacher, for all the blessings. I express my sincere thanks to all the faculty members of the Department of Physics, for their support and encouragement.

I extend my sincere thanks to the University Grants Commission, for providing Teacher fellowship under the Faculty Improvement Programme.

I am extremely thankful to the Principal and staff of my college, K.K.T.M Govt. College, Pullut, Kodungallur for the support and inspiration.

I take this opportunity to thank Prof. K. Babu Joseph, former Vice Chancellor and Head of the Department of Physics, CUSAT who has paved my way to research. I acknowledge my gratitude to Prof. V. P. N. Nampoori, Prof. V. M. Nandakumar and Prof. P. Radhakrishnan, of International School of Photonics, CUSAT, for the encouragement and support during my research tenure.
I thank Dr. Reji Philip and Miss. Lekshmi of Raman Research Institute, Bangalore, Vishnu Kavungal and Mathew of ISP, CUSAT and Prof. P.K. Das, IISc Bangalore for the help extended in characterising the nonlinear optical properties.

I am also thankful to Dr. Deepthy Menon (formerly of ISP,CUSAT), Dr. Reethamma, of ISP, CUSAT for all the help and support rendered.

Thanks are also due to the non teaching staff, Department of Physics, CUSAT for the help and services rendered throughout the period of research.

Being with all the members of our DREAM lab- Jeeju, Sajimol Augustine, Sreekanth Varma, Aanand, Dr. Dhanya T, Anilkumar K, M, Francis Xavier and Rajiv Tomy was a nice and enriching experience. I cherish the moments spent with my teacher friends Jeeju and Sajimol Augustine, especially the lunch breaks, sharing dishes and also ideas. Thanks to Sukesan (Jeeju’s husband) of CUSAT for the safe and joyful drive to University and back home.

I am extremely thankful to my senior research scholars Dr. Arun K J, Dr. Amritesh and Late Dr. Raveendranath who have stamped a rich research culture in our lab.

I take this opportunity to thank Dr. Sreeja, Dr Aneesh, Subha, Krishna Prasad, Sanal, Hasna and Ganesh, former and present research students of the Department of Physics for the sincere help extended, whenever necessary.

The services rendered by STIC, CUSAT, SAIF, IIT Madras, SCTIMST Trivandrum and CIPET Bhuvaneswar are gratefully acknowledged.

No words are adequate to express my indebtedness to my family, especially my husband and daughter who were always with me with invaluable support, care and affection, without any complaints, even when their needs were overlooked in the tight schedule. I am also grateful to my sister, brother in law and son in law for the
consideration and care extended. Also I remember the prayers of my parents, who are
no more now but, were highly concerned about my research.

Above all, I bow my head before the Almighty for the everlasting blessings
showered on me, without whose grace, this report would not have emerged in this form.

Sreevalsa.V.G