

ACKNOWLEDGMENT

All the work in this thesis was done in collaboration with and under the supervision of Dr. V. A. Raghunathan. I would like to thank him for all the advice, encouragement and help. Without him, this thesis would not have been possible. Raghu has not only been a great supervisor but also a trusted friend. I would like to thank him for everything that I learnt from him.

I would like to thank Prof. Madhusudhana for his constant interest in my work and his encouragement. He always managed to take out time from his busy schedule to discuss physics.

Being exposed to Prof. Kumars' infectious enthusiasm for all things scientific was a rare learning experience. I thank him for his interest in my work and also for all the scientific discussions.

Dr. John Katsaras was very generous with his data and I would like to thank him for letting us use it the way we felt like. He has been very patient with my numerous questions regarding the experiments, the data and the samples. I would like to thank John for his constant encouragement and optimism whenever my morale was down. The e-mail collaboration with him has been a very pleasant and fruitful experience.

The theoretical work in this thesis was done in collaboration with Dr. Yashodhan V. Hatwalne. Yashodhan has been like a second advisor - always ready to help, to listen to my grumbling, to read through drafts, and to explain and patiently argue a point that was crystal clear to him but totally mysterious to me. I was the lucky beneficiary of his mathematical as well as his culinary skills.

I would like to acknowledge discussions about the structure of the ripple phase with Prof. Sriram Ramaswamy and about the Landau theory of ripples in achiral membranes with Prof. J. Prost.

Barring ourselves, Dr. Madan Rao probably knows the most about our work - I would like to thank him for always being there to listen to and constructively criticize new ideas. I have time and again made use of his uncanny ability to pin-point exactly where one stops talking sense and starts waving ones' hands. The heated discussions on interesting issues, both physics and non-physics were always enjoyed.

Discussions with Prof. Rajaram Nityananda were special; his intuitive understanding

of physics and his equally unique knack of catching on to the crux of a question one is trying to ineptly pose, made him the favorite target at which we all shot our questions. He is being missed in RRI academic circles.

Prof. Anantharamaiah and Dr. Deshpande's skills with data and images were tapped at various stages of the work. I would like to thank them for expert advice. Iswar and Vikram are thanked for the latex cosmetics. Durba and Rema patiently read through various versions of this thesis. I thank them for their comments.

Mr. Mani's help in building the heater is gratefully acknowledged. He was always ready to help out with all the work in the lab that needed his special skills. Mr. Ram, Mr. Dhason, Mr. K. Subramaniam and Mr. Ishaq's help at various stages of the experimental work were invaluable. I would like to thank all of them. I would also like to thank the chemistry lab for helping out with emergency supply of non-consumable alcohol.

One of the reasons RRI is special, is its wonderful library and its extremely efficient library staff. I would like to thank every one at the library for cheerfully going out of their way to help. Ratnakar, Girija, Manjunath, Nagaraj, Geetha, Vrinda, Chowdappa and Hanumanthappa never said no to any of my requests however atrocious or inconvenient to them; they were always there to make life easier for us.

I gratefully acknowledge the computer department. Special thanks to Devdas, Indrani and Jacob for all the help.

Paper work was made very easy by Ms. Marissa, Mr. Manjunath and Mr. Radhakrishna. I would like to thank all of them.

The canteen staff of RRI were always ready to do more than their duty to save us the trouble of having to hunt and gather our meals. I thank them for all the food served with a smile and the numerous cups of coffee they made for us even when not on duty. I thank the RRI drivers who ferried us back and forth at strange hours but never complained. I thank all those people who work hard behind the scenes to make RRI what it is - the gardeners, the cleaning staff and the security people.

The wardens of the hostel are acknowledged for never throwing the rule book at us and always being sensitive to our problems.

I would like to thank Mrs. Rao and Dr. Swaminathan for believing in me and encouraging me to believe in myself. What they taught, though interesting, was not so important - how they taught it is what made all the difference.

I would like to thank all my seniors and juniors in LC Lab from whom I learnt new things. The discussions with Sarasij and Rema were always fruitful because they always asked 'why'. I learnt a lot by talking to them. I consider myself lucky to have batch-mates like Giri and Vatsa who have always been very generous.

I would like to thank my friends in the astro-block who were always ready for a good joke and ready to supply the daily quota of tannin and caffeine. Mastermoshai's skill with the leaves was many many times employed for my benefit. The kid was a comrade-in-arms through exciting times. All my friends from IISc are thanked for all the good times together.

Raghavan and Sujata were always ready to listen sympathetically to my cribs over the invariably excellent dinner that they so often cooked for us. I would like to thank them for both the patient hearing and the great grub. Special thanks to Usha and Raghu, Madhuri and Abhijit, Chits, Mary and of course Yhat for the much needed sustenance.

I would like to thank Rema and Niruj for all the mad times in RRI and Mamata and Niruj for all the mad times in Bangalore; also all three of them and Indu and Sushan for listening to and advising me about my various academic and non-academic cribs. A big thanks to bu for the e-mail cheering up sessions.

Thanks to Chobi for being an inspiration, she and Kanu are always remembered. Thanks to Ma, Baba, Rem and Madhavan for every thing.