

## ACKNOWLEDGEMENTS



*I am very thankful and indebted to my guide Prof. L.S. Chamyal, whose guidance, encouragement and generous support made this thesis possible. His scientific suggestions and critical arguments were very helpful in enhancing the quality of this work.*

*I am extremely thankful to Head, Department of Geology, The M.S. University of Baroda, Vadodara for providing departmental facilities and support. I am thankful to the Director, Physical Research Laboratory (PRL) for granting me permission to register for Ph.D. as an external candidate. I would like to thank Ministry of Earth Sciences (MOES, earlier Department of Ocean Development) for their kind support with ship time for sample collection. I am grateful to Director, Centre for Marine Living Resources and Ecology (CMLRE), Cochin and their staff for their support with ship time onboard oceanographic research vessel FORV Sagar Sampada. I am thankful to Dr. A.J.T. Jull and G.S. Burr of NSF AMS facility at University of Arizona for providing me AMS radiocarbon dates. I am thankful to the Stable Isotope Laboratory for help and support.*

*I have the pleasure of working with two great oceanographers of the country, Prof. B.L.K. Somayajulu and Prof. S. Krishnaswami. I will always remain grateful to Prof. B.L.K. Somayajulu who introduced me to this fantastic world of oceanography. Prof. Krishnaswami with his critical suggestion was insatiable. His meticulous ways of approach to any problem though was painful to pursue but yielded some of the best outcome noticed ever. I am grateful to him for his scientific thoughts, critical remarks and teaching me nuances of research. I am highly grateful to Prof. M.M. Sarin for his scientific suggestions and meticulous ways of laboratory techniques. His encouragement and help with various experiments has benefited me immensely.*

*Dr. R. Rengarajan, Dr. Sunil K. Singh, and Mr. A.K. Sudheer were very supportive to me for any laboratory help and scientific suggestions. I am thankful to my colleagues of PRL in liquid nitrogen, glass blowing, workshop, library, maintenance, and administration for their constant support. I am thankful to Rajesh Agnihotri for stable isotope analysis and vigorous discussions. There are some colleagues who deserve special thanks for their constant support I had from them at various occasions. The first person who immediately comes to my mind is Mr. J.P. Bhavsar. I have a great appreciation for his selfless attitude and meticulous work ethics. I am very thankful to Navin, a friend, philosopher and a guide in various aspects of my personal and professional life. He deserves special thanks for his encouragement and help in shaping of my thesis. My good old friend, Kailash Dilli was very generous and spontaneous for help in thesis reorganisation. Jyoti, Ratan, Anjan, Dipu, Anil, Rama, Pauline, Ramani, Som, Deshpande, and Yadava are very special to me, whose*

*soothing company over long lasting period had a great impact. The present and past chemistry lab students Baskaran, Supriyo, Yadav, Rajesh, Koushik, Anirban, Santosh, Neeraj, Gyana, Kirpa, Rahaman, Ashwini and Vineet need special acknowledgement for their support, intense discussion and keeping a sound laboratory environment. The encouragement and fruitful scientific suggestions from Dr. R.K. Pant, Prof. A.K. Singhvi, Dr. P.N. Shukla, Prof. R. Ramesh and Prof. Kanchan Pande benefited me immensely. My sincere gratitude to my friend and late colleague Viswanathan for his support. I am very thankful to Sneha for her secretarial help with the thesis and Subhash for editorial help. Last but not the least, the Chemistry Gang needs special appreciation for the laboratory atmosphere it provided to me for over two decades.*

*Being active in various extra-co-curricular activities, I had opportunity to interact with large spectrum of people associated with various divisions. It is impossible to name all of them but they find a special place. Special mention needs to be there for the weekend football club and PRL tea club. I have nostalgic memories of my good old group of yesteryears "BAG", which made my earlier days exciting at PRL..*

*I dedicate this thesis to my belated father, who always wished to see it one day. I am grateful to my mother for her love and support. Shrabani (my wife) was a very encouraging factor in my life whose constant support and love not only at home but also in my scientific work kept me going. My cheerful daughter Maitreyi made my home a place of joy and her love and affection was my strength. I shall always remain grateful to my two younger brothers Shyam and Vijay, who were always there with me to support for any cause of the family.*

*(Ravi Bhushan)*