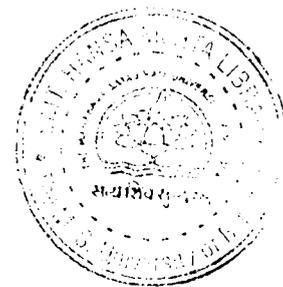


First of all, I would like to thank my supervisor, **Prof. Dr. Anjali Patel**, Department of Chemistry, Faculty of Science, The M. S. University of Baroda, for her inspired guidance, continuous encouragement, invaluable suggestions, and considerable understanding throughout the period of this work. This feat was possible only because of the absolute support provided by her. The good advice and support of her, has been invaluable on both an academic and a personal level, for which I am extremely grateful. In addition to offering me an interesting and challenging research work, she provided me an enough freedom to express my idea throughout the research work. Her enthusiasm, sincerity, and dedication to scientific research have greatly impressed me and will benefit me in my future career. Her words always inspire me and bring me to a higher level of thinking. What I learn from her is not just how to write a thesis to meet the requirements, but how to view this word from a new perspective. Without her instruction it is impossible for me to finish this thesis. I am very much thankful to my supervisors for putting me in the track of this research.

Thank you Ma'am, for all your help and support.

A handwritten signature in black ink, appearing to read 'Pathan Soyebkhan', with a horizontal line underneath.

Pathan Soyebkhan



ACKNOWLEDGEMENTS

I would like to thank University Grant Commission (**UGC-RFSMS**, New Delhi & **UGC- MANF**, New Delhi), for providing financial support.

I avail this opportunity to render my sincere thanks to **Prof. N. D. Kulkarni**, Head, Department of Chemistry, The M. S. University of Baroda, Vadodara, and **Prof. B. V. Kamath**, Former Head, Department of Chemistry, The M. S. University of Baroda, Vadodara for providing infrastructure facility.

I am thankful to the following persons for helping me during the different stages of my research work

^1H and ^{13}C NMR	Prof. S. R. Shah and committee	Department of Chemistry, The M. S. University of Baroda
FT-IR	Prof A. V. Bedekar and committee	Department of Chemistry, The M. S. University of Baroda
TG-DTA	Prof. P. Ghalsasi and committee	Department of Chemistry, The M. S. University of Baroda
Crystal Structure refinement	Prof. Samar Das	School of Chemistry, University of Hyderabad
SEM and EDX analysis	Dr. Vandana Rao	Metallurgy Department, The M. S. University of Baroda



Sophisticated Analytical Instrument Facility (SAIF)

CSMCRI, Bhavnagar	Single Crystal XRD, Powder XRD, BET Surface Area Measurement
IISc, Bangalore	^{31}P MAS NMR
SAIF, IIT Mumbai	ESR

It's my pleasure to acknowledge my senior, Dr. Pragati Shringarpure- Joshi for her helpful comments, suggestions and constant moral support at the early stage of my research. I would also like to thank my colleagues, Dr. Ketan Patel and Dr. Varsha Brahmkhatri for their co-operation during the work. Thanks to my supportive colleagues and friends, Mr. Nilesh Narkhede and Ms. Sukriti Singh who made the laboratory friendly environment for working.

I am thankful to all non-teaching staff of the Chemistry Department for their helping hand throughout my research work.

I am also indebted to my friends, Mr. Sabbir Chimanwala and Mr. Akeel Saiyed, who squeezed time from their busy schedule to help me. Furthermore, I have to offer my special thanks to my dearest friends, Pratik, Shweta, Chirag, Payal and Harsha, who gave me hearty support.

Finally, I am grateful to my family, especially my parents, who provide a carefree environment for me, so that I can concentrate on my study. Although they hardly understand what writing thesis is and what I research on, my parents are willingly to support any decision I make. Even though I cannot make money as other boys in my age, they never complain. They tell me that all I need to do is focus on my study and leave rest of other things to them. I am so lucky to have



them be my parents. I would also like to thank my fiancé, Mohina (Heeta) for her unconditional love and support.

Above all, I owe it all to Almighty God for granting me the wisdom, health and strength to undertake this research task and enabling me to its completion.