

Acknowledgements

I am greatly creditable to Indian Institute of Technology Jodhpur (IITJ) for providing me an opportunity and instrumental facilities to carry out my dream research work. I am thankful to Defence Research & Development Organisation (DRDO) Ministry of Defence, Govt. of India, for allowing me to register as part time candidate at IITJ and providing an in-house research platform to complete my PhD work.

I express my sincere gratitude to my Ph.D. thesis Supervisor, *Dr Rakesh Kumar Sharma*, Department of Chemistry, IIT Jodhpur for his enthusiastic and continual discussion, feedback and moral support to improve research work quality and completion of work. I am grateful to him for his *help* and *patience* as well as for constantly reminding me to be perfect in the little things that I do each day.

I extend my gratitude to my Co-supervisor, Dr Narendra Kumar (Ex-Director DLJ) for his continuous guidance and motivation. In spite of his busy schedule he always spared his valuable time for discussing the experiments and their outcomes.

My thanks are due to Dr Ritu Gupta, HOD, Chemistry. She has shown great interest in my work and helped a lot for characterizing the material and discussing the fundamental issues associated with experiments.

I am thankful to faculties of IIT Jodhpur which are engaged during my Ph.D. course work. All these faculties make me an efficient by introducing the novel concepts and techniques which are required in the contemporary research field.

At the Institute, I express special gratitude to Mr. Ganpat Choudhary (JTL, Chemistry) and Mr. Shubhum Pandey (JTL, Chemistry) for instrumentation and data acquisition, I deliver hearty thank to entire faculties, staff technical and non-technical of IITJ who helped me directly and indirectly way to achieve this milestone.

I also pay heartfelt thanks to my OiC & colleague, Mr Deepesh Patidar of Defence Lab Jodhpur, who has always supported and encouraged me for completing this work.

My thanks are due to Dr Yojana Janu for her unconditional help, love and technical support for this work.

I will be creditable to my friends; Dr Sapna Ranwa, Dr Arun Verma, Dr Kiran P. Sheleja, Ms Devika Lasihram, Dr Poonam Sharma, Dr Puraram, Mr Vinay Uniyal, Mr Gaurav Bahuguna at department and cross-departments to make research work joyful and healthy at Institute stay.

At last, I acknowledge and thank to my family members, especially my wife, Dr Annu Janu and kids, Tejas Janu & Veer Pratap Janu for the patience and love with which they ushered on me, and for bearing with me even when I was not spending a bit of time with them. My special thanks to my sisters, Dr Vinita & Dr Yojana and their family members, Dr Satpal Singh & Dr Vikas for continuous encouragement. I pay respects to my *parents*, *Smt. Sampati Devi & Shri Ved Prakash* for all their altruistic *love, sacrifices and blessings*.

Vikash Chandra Janu
Ph.D. Student

