ACKNOWLEDGEMENT

The dissertation journey has been long, hard and tiring at various stages. Had it been not for the motivation of so many good people in my life, this journey would have been dramatically more arduous. It is therefore only just to not only to thank the people directly involved but also those who have been responsible to lead me to this stage—many playing a major role from behind the scenes.

It is almost customary to start this section by acknowledging the contributions of the supervisor, and why not after all it is the boss who guides a graduate student during his PhD helping and motivating him/her to carry on during the difficult phases. However what makes my supervisor Dr. Abhishek Dey stand apart is the fact that not only has he guided me in my research work but also helped me to build my character and personality by being an exemplary leader. A leader of extraordinary capabilities, he shields us (his group members) when required but makes it a point not to spoon feed us. He keeps exposing us to the most difficult challenges and even as we do not realise he is always there watching our back. The result: we made an empty room of cement and bricks into the Dey group laboratory in its present shape and form by cleaning and washing it, setting up the furniture and even making the electrical connections. In all this, Sir was always with us leading from the front. Under his leadership, we started from a small room in Indian Association for the Cultivation of Science to be a well-known group in the scientific world in just a few years’ time. He always said he handpicked his students. I have asked him many a time as to why he thought I was special. He said I would know with time. I must say I still don’t know why, but I know that his faith in me has done wonders to my confidence over the years. I also remember him telling me on my very first day that he wanted to develop a hard working but a happy group, because if the group is not happy they can never do good work. Needless to say, he did what he intended. Professional or personal, whenever we are in any inconvenience he is always there to help. I can write another 10 pages about my experience with him and I would still probably be not able to explain the love, respect and admiration I have for the man.

The wonderful days I have spent in the MAD lab would have been a myth had Ma’am; Dr Somdatta Ghosh Dey not replied to my mail granting me an appointment. Previous attempts to get an appointment with Sir had failed miserably. I do not know what happened but I went to meet Ma’am and ended up in Sir’s group. It did not matter much because the Dey and
Ghosh Dey labs coexist as one group. We benefit from the experience and guidance of both Sir and Ma’am whenever required.

That brings me to my fellow group members. Phew!! I don’t know how to start because I have so many hundreds of memories. As is the case with most, the group is my second family. I have been extremely fortunate to have got so much love and respect from my seniors, contemporaries and juniors. Whenever I have turned to somebody for help or advise, professional or personal, I am always assured that the person is going to give his/her absolute honest 100%. The camaraderie that we have shared made my job easier especially in times of tension. It is difficult to comprehend the fact that my days with them is numbered now.

Sabya Da aka Kaka is the senior most member of our group. He is one of the people I am indebted to for helping me in making my transition from an MSc student to a research scholar. It is to be noted that I joined the Dey group without any form of prior research experience in form of summer, winter or 1 year projects. As a result, I did not have any idea of how a research lab worked and hence kept committing mistakes. Sabya da who probably understood my situation never made fun of my stupidities and very diligently taught me basic stuff like cutting TLC plates, packing columns. I am also thankful to him to give me the opportunity to learn DFT which was required in one of his projects. Sohini Di who was the 2nd member of the group has also been extremely helpful as a senior. Her major contribution in my research career would be to teach me the importance of discipline while doing experiments. So if you are using any apparatus or machine, make sure that you clean it and keep it back in its place once you are done. In a big group like ours, these are very important habits which need to be cultivated in new researchers for smooth functioning of the lab. Likewise I have learnt from Subal Da the need to be aware of the developments in the scientific world by regularly reading scientific journals. Debu Da, who was ma’am’s first student, was also very kind to me and taught me how to handle the analytical instruments like UV-Visible spectroscopy and EPR. However, Subhra Da who completes the first batch of the Dey group, has had the biggest impact on my research life. He taught me synthetic procedures from scratch when I had no idea how to even work up a reaction. It was working with him in the early days that I slowly got acclimatized to the research environment. We went on to have many wonderful days together including our first international trip to Istanbul. A “Maat-ir maanush” (down to earth person) by nature, Subhra Da’s influence on my life will be permanent.
Pradip aka PKD, Kushal and me joined Sir’s group in 2011 while Chandra joined Ma’am’s lab around the same time. I should and would begin with Kushal who has been a very close friend from the beginning. We share a very good rapport and have thoroughly enjoyed our friendship over the years. It is the love and respect that we have for each other, which keeps the bonds of our friendship get stronger every day. I can safely say that our friendship has reached a stage where we know each other so well that we often know exactly what the other person is thinking by just looking. On a professional front, I have always been inspired by his extremely efficient work culture. On similar lines, PKD has been a good friend and a great colleague. I am very thankful to him for providing me with porphyrins with different axial ligands-oxy adducts of which went on to become a very important part of my thesis. I am also thankful to Chandra for being such a good friend over the years. I will fondly remember the rides back home on his motorbike, stopping over for tea and cigarettes; discussing and arguing on almost all topics under the sun, moon and stars.

About 7 months after me, Sudipta and Biswa joined our group, while Soumya joined Ma’am’s. I have been fortunate to have worked with both Sudipta and Biswa for a significant amount of time. Not only are they both extremely intelligent and hardworking people but also wonderful human beings. I call Biswa “crisis man” for he can always be found supporting somebody who is fighting a crisis situation- could be accompanying a friend whose relative has been hospitalised in the middle of the night or lending money to anybody in need. Similar traits can be seen in Sudipta as well with a bonus of extremely effective organization skills. I have always envied his coolness. Both of these good friends deserve every bit of all the wonderful things happening in their professional and personal lives. Soumya on the other hand is much more hot-headed but true with respect to his emotions. We’ve had a “legendaaary” fight only to bring us closer as friends and then thanks to the others (read Chandra) the serious fight soon became a butt of jokes at our breakfast addas at Mithu Da’s canteen.

Atanu joined our lab in 2012 to make us a group of ten. He is the one who started DFT calculations in our group and I will forever be indebted to him for teaching me the same. Manas who joined Ma’am’s group around the same time as Atanu. I did get an opportunity to work with him in a project and thoroughly enjoyed it. The next batch comprised of Samir and Ankita followed by Asmita, Aman, Estak and Snehadri. Pritha, Manjistha and Sharmistha joined in 2015. They are all wonderful people and I’ve spent very good times with each of
them. I would have to take special mention of Asmita. Even though I have known her since 2014 only, I have had a really good time working with her and with time my relation with her has developed into a sister cum friend cum colleague. I have found her to be a gem of a person and would sincerely wish she exerts a little more control over her temper which would make more people realise how wonderful a person she actually is.

Indian Association for the Cultivation of Science provided me with a healthy, research friendly atmosphere for all these years. Likewise the Department of Inorganic Chemistry with its faculty and staff have contributed to my development as a researcher. I’ve thoroughly enjoyed my course work classes of Prof. Pradyut Ghosh and Prof T.K.Paine. I also thank Prof. Paine for always greeting me with a smile whenever I have entered his office requesting recommendations or permission to use instruments like EPR and Low temperature UV. The Inorganic Office members have taken care of the official procedures especially Sadhan Da, Tamal Da and Tarak Da.

It is now time to go back the years to acknowledge the contribution of my school and college in giving direction to my life and career. I thank all the staff and teachers of Calcutta Boys’ School especially my high school English teacher Mr Dantes and science teacher Mr. D.N. Bhattacharya. My teachers at St Xavier’s College especially Dr Sanjib Ganguly and Dr Sujoy Roy Chowdhury have had a major impact on my academic life. It was Sujoy sir who got me out of a mess with his constant encouragement and made me realise that the path to success is filled with failures and frustrations and that if one keeps fighting he/she will eventually get the rewards. Dr Sanjib Ganguly on the other hand was instrumental in developing my love for Inorganic Chemistry which eventually went on to become my field of research. I would also like to thank my professors from Delhi University especially Prof Nagarajan and Prof. Rajeev Gupta for their support and encouragement at a time in life when failures were getting the better of me.

My friends (and I’ve a whole of them) have been a major source of fuel in my journey so far. I owe a lot to them for helping, motivating and standing with me through my difficult times. I am very thankful to my childhood friends Anirban, Angshuman, Avilash, Parijat, Abhrajyoti, Deepan and Tathaghata for sticking around in my life. We don’t meet often now but whenever we do we take off from where we had left. I was very fortunate to have great group of friends at Xaviers’ too. I am indebted to Chandradhish, Abir, Anirudra, Shreyo, Rimpa, Sonal, Madhurima, Roumita and Esha for being with me through thick and thin. In
my MSc days I found great friends in Abishek, Aniruddha, Chinmoy, Chandradhish and Somananda. These guys were like my soulmates and made my stay in Delhi the best two years of my life. We used to share everything and have at multiple times eaten from the same plate. We were like brothers from different mothers.

My family is the backbone of my life and everything I have achieved in my life is because of their love, sacrifice and prayers. Baba and Ma raised me and Bhai with plenty of dreams but never pressurized us at any point by forcing their choices on us. They have tried their best to let me concentrate on my work and not let me get bothered by family duties unless absolutely necessary. Bhai is my oldest and best friend. He is only 2.5 years younger to me has been my closest confidant and my main “go-to man.” I have been blessed to have been brought up in a joint family where we kids (me, bhai and the cousins) enjoyed the love and attention of all the uncle aunts, grandmoms and granddads. I am indebted to all of them for all the love, affection and kindness they have showered on me. Daddy, Jyatha, Nojethu, Fuljyatha, Natunjyatha, Chhote Jyatha, Mej Jyatha, Ranga Jyatha, Pishemoshai and Kone Jyatha have loved and taken care of me and Bhai like they would of their own children. I will have to make separate mention for Jyatha (Sej-jyatha), Natun Jyatha, Chhote Jyatha and Ranga Jyatha as they have had a very strong impact on my upbringing. These are not just my uncles but my real life heroes and in a conscious attempt I do try to copy their ideologies, principles and sometimes even their mannerisms in life. Similarly, my aunts Mummy, Sejo ma, No ma, Natun ma, chhoto ma, ranga ma, kaku and pishi, boropishi and monima played very important roles in my upbringing. I have spent some wonderful days with my cousins while growing up. We were all brought up in the same house and I feel it is those days which taught me the virtue of sharing and the joys associated with doing things together; be it playing games, sharing firecrackers in Diwali or celebrating bhaifonta. We maybe in different places now but we will always be there for each other. On my maternal side I am indebted to my Dadu, Dimma, mama and Maima for spoiling me with all the love in the world. Dimma passed away in 2005 but I still feel she is around me loving, blessing and protecting me. I am also extremely lucky to have lived with my grandparents from my paternal side (Dadu and Thamma). Even though Dadu passed away when I was young, Thamma at 94 still treats me like she did when I was a small boy; of course I love it!!

My heart beats for my nephews, nieces and my 3 year old sister (Mamai/Mummum). These next generation kids Anupriya (Mamai), Shankhadeep (Biblu), Tavishi, Koko, Ardrita,
Mickey, Rishaan and Reyansh, make me feel grown up and responsible. I may not be physically close to all of them but they mean the world to me.

I met Kanika in 2008 before marrying her in 2015. In other words she has been there throughout my PhD journey. I consider myself extremely lucky to have her in my life because she has been very supportive and understanding when I have not been able to give her enough time because of work. Even when I have ruined many dates by bantering about work related frustrations, she has been extremely calm, patient and helped me settle my nerves by either giving me hope or deviating my attention to happier topics. She understands my priorities (both professional and personal) and value them enormously. I continue to strive to be as wonderful a husband, as a wife she is to me. A shout out of thanks to my in-laws (papa, mamma, vishal, romi didi, jiju and the kids Shivansh and Sara) for accepting me in the family with so much love and affection.

My acknowledgement cannot be complete until I thank the man who has inspired me from when I was 8 years old. Even though he mastered in a field which is not even remotely close to the one I am trying to build my career on; his principles of discipline, hard work and no pain no gain is applicable in every sphere in life. Yes I am talking about my hero, Sachin Ramesh Tendulkar. It might be very surprising for anybody reading to find Sachin’s name here but the fact of matter is that, this is the man who inspired me to keep fighting (through his cricket) when times are not in my favour. He taught me the value of family love as well as the importance of honesty and dedication to work. I can recall multiple occasions where I was tired, depressed and heart-broken; when HE would play a brilliant innings against the best of oppositions (even if he were in miserable form till then) as if to specifically cheer me up and make me realise that no situation is bad enough to give up trying. Thank you Sachin for being such an inspiration; Thank you for the memories!!!

Kaustuv Mittra
“Everything is theoretically impossible, until it is done”

Robert. A. Heinlein