

*Dedicated to the beloved memory of
My parents*

*Late Debeswar Goswami
And
Late Tarini Goswami*

DECLARATION

I, Rajat Goswami bearing Registration Number **Ph.D./725/09 Dt: 11.02.09** hereby declare that the thesis entitled **“SYNTHESIS, STRUCTURAL ASSESSMENT AND BIOLOGICAL STUDIES OF SOME MIXEDLIGAND COMPLEXES OF Cu(II), Zn(II) and Cd(II)”** is the record of work done by me and that the contents of this thesis did not form the basis for award of any degree to me or to anybody else to the best of my knowledge. The thesis has not been submitted to any other University/ Institute.

The thesis is being submitted to Assam University for the degree of **Doctor of Philosophy in Chemistry.**

Place: Silchar

Rajat Goswami

Date: 10.02.2016

ACKNOWLEDGEMENT

This is my opportunity to express my hearty gratitude to my esteemed supervisor Prof. Chira R. Bhattacharjee, under whose guidance this research has been conducted. His constructive suggestions and healthy criticisms was a continuous source of inspiration to me during the entire course of the work.

I am grateful to Prof S. B Paul and Dr. P. C. Paul, HOD, Chemistry for their help, inspiration and valuable support. My thanks are due to Dr. Paritosh Mandol for help with the DFT computational work. I am thankful to Dr. Sk. Jasimuddin for his sincere support and help. I would like to render my sincere thanks to, Dr. M. K. Paul, Dr. S. Ghosh, Dr. H. Acharya, Dr. D. Sengupta, Dr. S. Choudhury Dr. T. Sanjay Singh and Dr. R. Panchadhayee, faculty members of the department for their words of encouragement.

I am thankful to Prof. B. S. Purkayastha, Dean of the School of Physical Sciences for sustained support.

I would like to acknowledge Dr. M.K. Paul, Principal, Lumding College, Lumding for his support during my PhD research. I am grateful to Mr. P. Jidung, Director of Higher Education, Govt. of Assam, for permission to pursue my research work on part time basis.

I convey my thanks to Dr. Jayashree Rout of Ecology & Environmental Science department for her untiring support throughout.

I convey my heartfelt thanks to Prof. Samira Behera for his kind support and help.

I also express my sincere thanks to Dr. Narayan Biswas, Sr. Scientist, Central Silk Board for his cooperation in obtaining the DFL of eri silk worm and designing the protocol for application of metal - amino acid complexes. I express my gratitude to Mrs Sanghamitra Das (Bose), Associate Professor and HOD, Zoology, and S. K. Jha, Associate Professor and HOD, Mathematics, Lumding College for their kind help with work related to silk, biological study. I must thank Dr. Alok Deb Roy, Dr. Paritosh Choudhury and Dr. Madan Ch. Das of our group for good company and encouragement during the initial days of my research.

I would like to seize this opportunity to thank profusely my labmates Dr. Sankar Neogi, Dr. Pankaj Goswami, Dr. Gobinda Das, Dr. Debraj Dhar Purkayastha, Dr. Mridushmita Mishra, Dr. Chitraniva Datta,

Dr. Richa Chaturvedi, Abhijit Nath, Dr. Harun All Rashid Pramanik, Sutapa Chakraborty, Bishop Dev Gupta, Rupam Chakrabarty and Nirmalendu Das for their manifold support. I am also thankful to all other research scholars of the department for their help and interest in my work.

I also sincerely acknowledge the support extended by members of the technical staff P. R. Ramesh, S. Bhattacharjee, Biswajit Nath, Alom Barbhuiya, Rajib Kurmi, J. Barbhuiya, L. Hmar and Sanjeev of during the tenure of my research. I am thankful to my colleagues Dr. J Arjun, Gautam Lodh, Dr. Jayanta Madhab Bora, Biman Acharjee and others, for their support in different ways.

I am grateful to Debabrata Sinha and Dr. Saitanya Bharadwaj, of IIT, Guwahati, for their cooperation, help and support.

I express my gratitude to Prof. Robin Dutta, Tezpur University, Dr. Dipak Kr. Dutta, Dr. Deepak Prajapati, Dr. Nabin Ch. Baruah, Dr. J. Sarmah, Dr. Mukut Gohin, and Prabin Baruah of CSIR-NEIST, Jorhat, and Dr Prabin Baruah of GU for their encouragement and suggestions, sincere help in many ways. I am thankful to the staff of Central Silk Board, Diphu for their kind help to get the (DFL) eggs of eri silk worm. I acknowledge SAIF (NEHU), Shillong, IACS, Kolkata, CDRI, Lucknow, Gauhati University, Guwahati and CSIR-NEIST, Jorhat for spectral and analytical service. I am thankful to University Grant Commission (UGC) for providing financial support, in the form of MRP.

Last but not the least, I must mention about Monashri, my wife and my son Pragyan who constantly stood behind me and supported me a lot during the critical periods of research and compilation work. Finally, I deeply remember my beloved mother late Tarini Goswami who inspired me all the time for my higher education.

Rajat Goswami