Dr. Iqbal Abdul Latif **Assistant Professor (Contract)**

Central University of Karnataka, Karnataka

I. Personal Info

Date of Birth	:	*8th May, 1979*
Place of Birth	:	*Kolkata, West Bengal, India*
Father's Nam	:	*Md. Abdul Hafiz*
Mother's Name	:	*Lutfun Necha*
Nationality	:	*Indian*

Marital Status	:	*Married*
Permanent residential Address	:	*Vill. Patnil, P.O. Patnil* *Dist. Birbhum, West Bengal* *PIN Code* – 731302 *INDIA*
Native Language	:	*Bengali*
Medium of Instruction	:	*English*

II Current Position

Working as Assistant Professor in Chemistry at New Alipore College, Kolkata.

III.Education

***Secondary**, 1995, from Ramakrishna Mission Vivekananda Vidyamandir, Malda, West Bengal, India*

***Higher Secondary**, 1997, from Scottish Church College, West Bengal, India*

***B. Sc.**, with Honors in Chemistry, 2001, Ramakrishna Mission Residential College Narendrapur, University of Calcutta, West Bengal, India*

***M. Sc.**, Chemistry, 2003, Indian Institute of Technology Kharagpur, West Bengal, India.*

***Ph. D.**, Chemistry, 2012, Indian Institute of Technology Bombay, Maharashtra, India.*

Summary of Educational qualification:

Examination Passed	Board/University	Year of Passing	Class/Div	% of Marks	Subjects studied
Madhyamik	W.B.B.S.E	1995	1st	81	BengEngMath
Higher Secondary	W.B.C.H.S.E	1997	1st	69	PCMB Beng. Eng.
B. Sc	C.U.	2001	2nd	54	Chemistry(H) Math Phys
M. Sc.	IIT, Kharagpur	2003	1st	CGPA 7.2 (10)	Chemistry
Ph. D.	IIT, Bombay	2012	--	--	Chemistry

IV. Research Experience

July 2012 to July 2014 as a post doctoral Research Associate in the Department of Chemistry, Indian Institute of Technology Bombay, Mumbai, India

V. Teaching and Research Experience

Worked as Head of the Department at PG Chemistry, Al-Ameen Arts, Science, & Commerce College, Hosur road, Bangalore for 2 years.

i) As guest Lecturer in Vidyasagar College for Women for two years I taught Quantum chemistry, Kinetic theory of gas, Statistical Mechanics.

ii) Part-time Lecturer at Sammilani Mahavidyalaya, Kolkata for One year.

iii) CH-103 (Tutorial Associate, 'General Chemistry') for the 1st year B. Tech students. Thermodynamics, Chemical Kinetics, Introduction to Spectroscopy, Quantum Chemistry and Chemical Bonding

iv) CH-434 (Physical Chemistry Lab) for 4th year M. Sc. Students at IIT Bombay.

v) M. Sc. Chemistry – last Five Semester

- *a. Quantum Chemistry*
- *b. Group theory and Spectroscopy*
- *c. Thermodynamics & Statistical thermodynamics*
- *d. Taught Organic Chemistry for first 3 semester of MSc during my assignment to Department at PG Chemistry, Al-Ameen Arts, Science, & Commerce College, Hosur road, Bangalore, which includes all kinds of Organic Reaction Mechanism (including Name reactions except*

Oxidation-Reduction), Stereochemistry, Photochemistry, and Pericyclic Reactions.

vi) *Now I am teaching Quantum Chemistry, Group Theory, Chemical Kinetics in Central University of Karnataka.*

Summary of Experiences:

Name of Organization	Location	Position Held	Pay (PM)	Period		
				From	To	Total(yr)
Vidyasagar College For Women	Kolkata	Lecturer	6000	1.10.2004	30.01.2006	1.25
Sammilani Mahavidyalaya	Kolkata	Lecturer	6000	06.11.2006	09.07.2007	0.8
IIT Bombay	Mumbai	Temp. Research Associate	23000	25.07.2012	31.07.2014	2.0
Al-Ameen Asc College Bangalore	Bangalore	Assistant Professor	50000	01.08.2014	16.07.2016	2.0
Central University of Karnataka	Gulbarga, Karnataka	Assistant Professor (Contract)	45000	09.08.2016	10.05.2017	0.83

VI. Computer Knowledge

a) Operating System: Windows, LINUX/UNIX

b) Programming: Fortran 77/90, Matlab/Xilab, Working Knowledge in Java, C

c) i) Quantum Chemical Molecular Mechanics Software: Gaussian, Hyperchem, DelPhi. ii) Molecular Modeling Software: Viewer Lite, Swiss PdbViewer, Gaussview, MOLDEN, MOLEKEL etc.

VII. Language Known

Bengali, Hindi, English

VIII. Title of the Doctoral Project

'Theoretical Investigation on Organic Magnetic Molecules'

Guide: *Prof. Sambhu N. Datta, Department of Chemistry, IIT Bombay.*

The above Information is correct to the best of my Knowledge

Dr. Iqbal Abdul Latif

IX. Reference:

First Referee	Second Referee	Third Referee
Prof. Sambhu N Datta *Department of Chemistry, IIT Bombay* *Powai, Mumbai* *Maharastra-400076* *Ph: 02225767156* *sndatta@chem.iitb.ac.in*	*Prof. Arindam Chowdhury* *Department of Chemistry, IIT Bombay* *Powai, Mumbai* *Maharastra-400076* *Ph: 02225767154* *arindam@chem.iitb.ac.in*	*Prof. R B Sunoj* *Department of Chemistry, IIT Bombay* *Powai, Mumbai* *Maharastra-400076* *Ph: 02225767173* *sunoj@chem.iitb.ac.in*

X. Statement of Purpose

First of all my aim is to be a good teacher, to impart knowledge so that students get motivated to gain more knowledge, i.e. they become hungry for more knowledge. So that they become successful in career persuasion, they become motivated to pursue basic science as career, they become motivated to research in any field of science and technology. My process of teaching will be such that students become more interactive, more vibrant.

I want to be a good researcher not any less. As a research, I want always to remain hungry for more exploration, to be as curious as a child throughout the career, to publish papers in reputed international journals. During my doctoral research I learnt basics of Computational Chemistry and Theoretical Chemistry. During my post-doctoral research I learnt more of Computational Chemistry and also learnt how it can be applied to Biological systems. I want to continue that work on Biological systems and explore more avenues and invent more avenues.

Above all as a faculty member of the Institution my aim will be to take the reputations of the institute to a great high. Greatness of an Institute depends on the goodness of its Departments. The quality of Department depends on the Infrastructure, and quality of the research output, and quality of the student output. It is not that quality cannot be achieved without great infrastructure but they can go hand in hand in a complementary way. As a faculty member of the institute my purpose will be to look onto those two factors.

XI. Summary of the Doctoral Work

Magnetism started with the discovery of ferromagnetism of iron lode in the early stage of human history. It has extensively contributed to human life, starting with the use of a compass and then the process of lifting iron, use of magnets and electromagnets in electrical equipments such as generators, etc. In modern era, magnetic materials have become indispensable for domestic and office purposes as well as in industrial activities. Because of the vast practical use of magnets, especially ferromagnets, magnetism has become one of the most essential issues in parts of basic physics and chemistry where the behavior of magnetic moments in

solids is dealt. During the previous few decades, the knowledge gained in the basic science has opened up new trends of magnetism in the development of cutting-edge electronic device applications such as computer memory, magnetic tapes floppy diskettes, and so on.

Organic materials often possess interesting optical properties. This makes it possible to construct devices with new functionality. The study of organic materials in condensed matter physics has recently received a great impulse. This is because of the discovery of conducting polymers, superconducting charge-transfer salts, C_{60}, etc. Conducting polymers, despite their flexibility, can have electrical conductivities as high as conventional metals such as copper. These have been used in the fabrication of polymer transistors and light-emitting-diode devices. Superconducting charge transfer salts can exhibit transition temperatures as high as 15 K. Carbon 'buckyballs' C_{60}, a newly discovered allotrope of carbon, when appropriately doped, may exhibit superconductivity or even unusual magnetic properties. Organic molecular materials have an extraordinarily diverse range of magnetic properties. They can be used as purely organic magnets, the origin of magnetism being one or more unpaired spin. Organic molecules can be used either to mediate the magnetic interactions or to play a role in complexes with magnetic transition metal ions.

The work has been on a number of novel computational investigations leading to understanding of the problem, mechanism and prospects of molecular magnetism. In particular, the focus in this work has been on studying magnetic molecules in which there exists a ferromagnetic coupling between spins on different molecular groups. Ferromagnetic organic molecules are of interest for various applications, for example, light induced switching between different magnetic states and functionalizing magnetic materials with specific chemical properties. Understanding the quantum-chemical origin of the spin states on the molecular species is hence important for improving their functionalities and creating new ways for predicting these materials that can be made useful to mankind. Work along these lines which aims at designing new magnetic materials is of immense importance from both technological and basic research considerations and is of interest to interdisciplinary areas involving chemistry and physics as well as materials science. The objective of the work throughout has been to find molecular magnets with very high ferromagnetic exchange coupling constant. The results reported are novel and highly significant. Various scientific aspects of quantum chemical calculations performed on 79 organic molecular systems have been performed. I have used quantum-chemical calculations to extract, from the computed electronic structure, the magnetic exchange coupling between spin states on a molecule. The work has led to publications in international journals of repute.

In continuation of the emphasis on organic systems, the set objective of my work was two folds: (1) To predict organic magnetic molecules with very high magnetic coupling constants and also some tunable magnets. This is more related to

material science. (2) To look into of the broken symmetry (BS) methodology and Spin alternation rule in Density Functional Formalism. This is based on Electronic Structure Theory.

XII. Publications

1. *Quantum chemical investigation of thermochemistry in Calvin cycle: D MONDAL, T SADHUKHAN, IA LATIF, SN DATTA, Journal of Chemical Sciences 127 (12), 2231-2240*
2. *Solvation of CO2 in Water: Effect of RuBP on CO2 Concentration in Bundle Sheath of C4 Plants: T Sadhukhan, IA Latif, SN Datta, The Journal of Physical Chemistry B 118 (29), 8782-8791*
3. *Theoretical and computational investigation ofmeta-phenylene as ferromagnetic coupler in nitronyl nitroxide diradicals, Arun K. Pal, Daniel Reta Maneru, Iqbal A. Latif, Iberio de P. R. Moreira, Francesc Illas, and Sambhu N. Datta; Theor Chem Acc* ***2014,*** *133,* ***1472****.*
4. *Metaphenylene-Based Nitroxide Diradicals: A Protocol To Calculate Intermolecular Coupling Constant in a One-Dimensional Chain, Tumpa Sadhukhan, Shekhar Hansda, Iqbal A. Latif, and Sambhu N. Datta; J. Phys. Chem. A* ***2013,*** *117,* ***13151****.*
5. *Theoretical Investigation of Photomagnetic Properties of Oxoverdazyl-Substituted Pyrenes, Tumpa Sadhukhan, Shekhar Hansda, Arun K. Pal, Gurram V. Venkatakrishna, Iqbal A. Latif, and Sambhu N. Datta; J. Phys. Chem. A* ***2013,*** *117,* ***8609****.*
6. *High magnetic exchange coupling constants: A DFT based study of the almost forgotten Schlenk diradicals, Iqbal A. Latif, Shekhar Hasnda and Sambhu N. Datta; J. Phys. Chem. A* ***2012,*** *116,* ***8599****.*
7. *Theoretical investigation of magnetic and conducting properties of substituted silicon chains. I. Hydrogen and oxo-Verdazyl ligands, Shekhar Hansda, Iqbal A. Latif and Sambhu N. Datta; J. Phys. Chem. C* ***2012,*** *116,* ***12725****.*
8. *On the photomagnetism of nitronyl nitroxide, imino nitroxide and verdazyl substituted azobenzene, Sambhu N. Datta, Arun K. Pal, Shekhar Hansda and Iqbal A. Latif; J. Phys. Chem. A* ***2012,*** *116,* ***3304****.*
9. *Photoswitching Magnetic Crossover in Organic Molecular Systems, Arjun Saha, Iqbal A. Latif, and Sambhu N. Datta; J. Phys. Chem. A* ***2011****, 115,* ***1371****.*
10. *Unusually large coupling constants in diradicals obtained from excitation of mixed radical centers: A theoretical study on potential photomagnets, Ujjal Bhattacharjee, Anirban Panda, Iqbal A. Latif, and Sambhu N. Datta; J. Phys. Chem. A* ***2010****, 114,* ***6701****.*
11. *Very strongly ferromagnetically coupled diradicals from mixed radical centres. II. Nitronyl nitroxide coupled to Tetrathiafulvalene via spacers, Iqbal A. Latif, Ved Prakash Singh, Ujjal Bhattacharjee, Anirban Panda, and Sambhu N. Datta; J. Phys. Chem. A* ***2010****, 114,* ***6648****.*

12. *Very strongly ferromagnetically coupled diradicals from mixed radical centres, nitronyl nitroxide coupled to oxo-verdazyl via polyene spacers, Iqbal A. Latif, Anirban Panda, and Sambhu N. Datta; J. Phys. Chem. A* ***2009,*** *113,* ***1595****.*

PUBLICATIONS in JOURNALS (SCI), In chronological order

S. No.	Name of the SCI Journal	Details of Research paper
1	*J. Phys. Chem. A*	***2009,*** *113,* ***1595****.*
2	*J. Phys. Chem. A*	***2010****,* *114,* ***6648****.*
3	*J. Phys. Chem. A*	***2010****,* *114,* ***6701***
4	*J. Phys. Chem. A*	***2011****,* *115,* ***1371***
5	*J. Phys. Chem. A*	***2012,*** *116,* ***3304***
6	*J. Phys. Chem. C*	***2012,*** *116,* ***12725***
7	*J. Phys. Chem. A*	***2012,*** *116,* ***8599***
8	*J. Phys. Chem. A*	***2013,*** *117,* ***8609***
9	*J. Phys. Chem. A*	***2013,*** *117,* ***13151***
10	*Theor. Chem. Acc*	***2014,*** *133,* ***1472***
11	*J. Phys. Chem. A*	***2014,*** *117,* ***8782***
12	*J. Chem. Sc*	**2015,** *133***, 2231**