

## Dr. Rabia Ahmad

Associate Professor (Physical Chemistry)

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Date of Birth : 20.12.1954

Date of Joining Service Jamia: 26<sup>th</sup> November, 1990

### Academic Qualification:

Examination	Name of the Board/ University	Year	Percentage	Division/ Grade	Subject
High School	A.M.U.	1970	83.2%	1 <sup>st</sup> Division 1 <sup>st</sup> Position	Eng., Theo., Hindi, Urdu, Sci., Math, Hist & Geog.
PUC (With Math)	A.M.U.	1971	85.4%	1 <sup>st</sup> Division 2 <sup>nd</sup> Position	Phy., Chem., Math, Eng., Bio.
PUC (Only Bio.)	A.M.U.	1972	80.0%	No division	
B.Sc.	A.M.U.	1975	76.5%	1 <sup>st</sup> Division 2 <sup>nd</sup> Position	Phy., Chem., Zoo., Bot. , Eng.
M.Sc.	A.M.U.	1977	77%	1 <sup>st</sup> Division 1 <sup>st</sup> Position	Chemistry

### Research Degree (s)

Degree	Title	Date of Award	University
M. Phil	Studies on the Interactions of Silver Iodide and Mercurychlorobromide in the solid state	Feb. 1981	A.M.U.
Ph.D.	Solid State Reactions	Dec. 1984	A.M.U.

### Employment Profile:

S. No.	Position	Period of service		University	Basic (Grade Pay)
		From	To		
1.	Associate Professor	26.09.2008	Till date	Department of chemistry, JMI, New Delhi-25	37400-67000 (9000/-)
2.	Reader	26.09.2005	25.09.2008	-do-	12000-420-18300
3.	Lecturer (Sr. Scale)	26.09.1998	25.09.2005	-do-	10000-325-15200
4.	Lecturer	26.09.1994	25.09.1998	-do-	2200-4000 (later 8000-13500)
5.	Lecturer	02.12.1993	30.09.1993	-do-	2200-4000
6.	Lecturer (Guest Faculty)	20.10.1991	05.04.1992	-do-	Small amount was paid
7.	Lecturer	26.11.1990	31.07.1991	-do-	2200-4000

### Training/Orientation/Refresher Programmes:

S. No.	Name of the Course	Place	Duration	Sponsoring Agency
1.	Orientation Course	J.M.I., New Delhi	14 <sup>th</sup> Feb.– 13 <sup>th</sup> March, 2000	U.G.C.
2.	Refresher Course	Delhi University	1 <sup>st</sup> September – 20 <sup>th</sup> Sept., 2003	U.G.C.
3.	Refresher Course	A.M.U., Aligarh	28 <sup>th</sup> July – 17 <sup>th</sup> August, 2004.	U.G.C.

### Projects Guided at Post Graduate Level: Thirty

1. Title–A review of the crystal structure of  $\text{HgClBr}$  and a reinvestigation of the capillary study of the solid – solid reaction  $\text{AgI-HgCl}_2$  Year 1995–1996.
2. Title – Study of Kinetics of solid state reaction  $\text{AgI-HgCl}_2$  and the effect of impurity on the reaction rate. Year 1996–1997.
3. Title – An Empirical Deduction of some parameters of alkali halides. Year 1998–1999.
4. Title – A literature survey of the mixed halides of Zn, Cd and Hg and an investigation of some properties of  $\text{HgClBr}$ . Year 1999–2000.
5. Title –Calculation of Ionicities of some classes of compounds and the parameterization of physical quantities. Year 1999–2000.
6. Title – A Study of the dependence of capillary solid–solid reactions on the conditions and some studies of  $\text{HgClBr}$ . Year 2000–2001.
7. Title – Study of the solid residue of Fehling solution, Tollen Reagent and solid–solid reactions in a capillary tube. Year 2000–2001.

8. Title – Study of the effect of moistening with solvents on this solid state reaction between AgI and HgCl<sub>2</sub> Year 2001–2002.
9. Title – Study of the effect of moistening with solvents on the solid state reaction between CuI and HgCl<sub>2</sub> Year 2001–2002.
10. Title – Study of the effect of impurities on the solid state reaction between CuI and HgCl<sub>2</sub>. Year 2002–2003.
11. Title – Study of the effect of polar compounds on the solid state reaction between CuI and HgCl<sub>2</sub>. Year 2002–2003.
12. Title – Study of some solid–solid reactions. Year 2003–2004.
13. Title – Some studies of HgClBr. Year 2003–2004.
14. Title – Study of the effect of the dipole moment of some polar compounds on the solid state reaction between CuI and HgCl<sub>2</sub>. Year 2003–2004.
15. Title – Identification of the best calculation of cohesive energy for fluorides of Calcium, Strontium and Barium and first Pressure derivative of Bulk Modulus for fluorides of Calcium, Strontium and Barium along with nitrates of Strontium and lead. Year 2004–2005.
16. Title – Identification of the best calculation of the Cohesive Energy of Alkali Halides using various Potential Functions. Year 2004–2005.
17. Title – Identification of the best calculation of the Cohesive Energy of Oxides, Sulphides, Selenides and tellurides of some elements using various Potential Functions. Year 2005–2006.
18. Title – A Brief Review of the theoretical studies of alkali halides. Year 2005–2006.

19. Title - Study of magnetic properties of Nanoparticles and their applications. Year 2005-2006.
20. Title - A comparative study of the calculation of the first equilibrium pressure derivative of the Bulk Modulus  $K'$  of the alkali halides using various theories. Year 2006-2007.
21. Title -A calculation of the First Equilibrium pressure derivative of the Bulk Modulus  $K'$  of some oxides using the Born Mayer Theory. Year 2006-2007.
22. Title - Some studies of the mixed halides of Cadmium. Year 2007-2008.
23. Title - Some studies of the Binary and mixed halides of Zinc. Year 2007-2008.
24. Title - Solid-solid reactions. Year 2007-2008.
25. Title - Study of the effect of the Dipole Moment of the Reactants and the Solvent impurity on the rate of some solid-solid reactions. Year 2008-2009
26. Title - Study of the Ionicity of Group II B Dihalides in Solution by measuring the molecular weight. Year 2008-2009.
27. Title - Study of some fats, oils and their components using  $(KI+HgCl_2)$  reaction in a capillary. Year 2009-2010.
28. Title - Study of the ionic nature of Group II B Dihalides using molecular weight studies in solution. Year 2009-2010.
29. Title - Study of Dalda, Saffola oil and their components using potassium iodide and mercuric chloride reaction in a capillary. Year 2010-2011.

30. Title – Study of the effect of the Dipole moment of the solid ionic and solvent impurities on the rate of the solid state reaction between cadmium chloride and 8-Hydroxyquinoline. Year 2010–2011.

#### **Conferences Attended:**

1. Attended the Workshop on “High Resolution X-Ray and Auger Electron Spectroscopy, with high energy heavy ion beams held on 26<sup>th</sup> Feb. 1996 organized by the Nuclear Science Center, New Delhi.
2. Attended the Workshop on “Ion beams in material research’ held between Feb. 17–20, 1997 Pune. It was organized by the Inter University Consortium for DAE facilities.
3. Attended the International Workshop on Chemical Evolution and Origin of Life March 5–7, 2010 held at the Indian Institute of Technology, Roorkee.

#### **Conferences attended with Poster Presentation**

1. Made Poster presentation of two papers at the 89<sup>th</sup> Indian Science Congress held at Lucknow between Jan. 3–7 (2002).
2. Made Poster presentation of two papers at the 4<sup>th</sup> Conference on Recent Trends in Instrumental Methods of Analysis held between Feb. 18–20, 2010 at the Indian Institute of Technology, Roorkee.

**Ph.D’s guided:** **Two**

#### **Publications:**

1. Precise and Accurate Estimation of Crystallographic Parameters by Maximum Likelihood and Minimax methods by G.B. Mitra, (Mrs.) Rabia Ahmad and Prabal Das Gupta, Indian Association for the Cultivation of

Science, Calcutta. Published in structure and Statistics in Crystallography by A.J.C. Wilson, FRS Adamina Press (1985) p 151–181.

2. Solid State reaction between mercury chlorobromide and silver iodide by M.A. Beg and Rabia Saud. Indian Journal of Chemistry Vol. 25A, 1986 p. 373–375.
3. Variety of objective question formats illustrated with a critical discussion of examples from Chemistry by M.Z. Rahman and Rabia Ahmad. School Sciences Vol. XXXII Nos. 1, 2 & 3 p (11–14), p. (4–8) p (5–9) 1994.
4. A Dimensionless Relationship between Bulk Modulus, Molar Volume and Cohesive Energy for some Ionic Diatomic Solids.  
Rabia Ahmad and M.Z. Rahman Khan Oriental Journal of Chemistry, Vol. 22 (2), (2006) p. 321–326.
5. A Theoretical Calculation of the first equilibrium pressure derivative of the bulk modulus,  $K'_0$  using the Born Mayer Theory.  
Rabia Ahmad and M.Z. Rahman Khan, Materials Science Research India, Vol. 3 (2a), (2006), p 261–262.
6. Densities of the alkali halides, the chalcogenides and some Cu –, Ag and Tl halides from the nearest neighbor distance. Rabia Ahmad and M.Z. Rahman Khan Materials Science Research India, Vol. 3 (2a), (2006) p 231–234.
7. A new formula for the ionic percentage of a chemical bond in the vapour phase. Rabia Ahmad and M.Z. Rahman Khan Oriented Journal of Chemistry, Vol. 23 (1), (2007) p. 369–370.
8. Brief Introduction to Statistical Thermodynamics. Part-I – Some Preliminary Remarks. M.Z. Rahman Khan and Rabia Ahmad. Bulletin of Indian Association of Physics Teachers Vol. 24, No. 9, Sept. 2007, p. 272–274.  
Part-II – The Statistical Distributions. M.Z. Rahman Khan and Rabia Ahmad Vol. 24, No. 10, Oct. 2007, p. 310–311.

Part-III – The Boltzmann Distributions and the Partition Function. M.Z. Rahman Khan and Rabia Ahmad Vol. 24, No. 11, Nov. 2007 p. 342–344.

Part-IV – Classical and Quantum Statistics, M.Z. Rahman Khan and Rabia Ahmad, Vol. 24, No. 12, Dec. 2007, p. 368–369.

9. Measurement of the grain size of HgClBr – nano form of HgClBr. Rabia Ahmad and Jamshed Ali. Oriental Journal of Chemistry Vol. 26 (3), (2010) p. 1127–1130.
10. Determination of the Chemical activation energy, the rate constant and order of inorganic solid reactions from capillary studies. Rabia Ahmad and Qamer Faisal, Oriental Journal of Chemistry Vol. 26 (2), (2010), p. 481–496.
11. A semi – empirical approach for the cohesive energy of the alkali halides. Rabia Ahmad, Qamer Faisal and M.Z. Rahman Khan, Oriental Journal of Chemistry, Vol. 27 (2), (2011), p. 633–638.
12. An experimental study of the ionicity of HgClBr. Rabia Ahmad, Qamer Faisal and Jamshed Ali. Oriental Journal of Chemistry, Vol. 27 (2), (2011), p. 769–770.
13. A preliminary discussion of the polynomial fits to the thermal curves of solid–solid reactions carried out in bulk. Rabia Ahmad and Qamer Faisal Material Science Research India, Vol. 8 (1), (2011), p. 107–111.
14. Formation of new products in a solid – solid reaction in the presence of organic solvent impurity. Rabia Ahmad and Qamer Faisal. Current World Environment, Vol. 6 (1), (2010), p. 115–124.
15. Preliminary results of the electrical conductivity and magnetic nature of the highly pressed doubled halides of mercury and their equimolar mixtures. Rabia Ahmad, Jamshed Ali and Qamer Faisal. Current World Environment, Vol. 6(1), 2011, p. 135–139.

#### **Article in Magazine:**

1. Equivalence of the distributions of Statistical Thermodynamics. M.Z. R. Khan and Rabia Ahmad, Physics Bulletin, Aligarh Muslim University, p. 11–13, Feb. 2009.