



**Jiwaji University, Gwalior**

A NAAC accredited Four Star University\*\*\*\*

**Dr. Radha Tomar**  
**Professor**  
**M.Sc. M.Phil. Ph.D**



**School of Studies in Chemistry,**  
**Jiwaji University, Gwalior**  
**(M.P.) – 474011, India**  
**Phone & Fax: +91-751-2442768**  
**E-mail: radha\_tomar11@yahoo.co.in**

**Home Address**

A-13/B, Govindpuri, University Road Gwalior (M.P.) - 474011, India  
Phone: +91-751-2345330 ; Mob : +91-9425341452

- Born** 18<sup>th</sup> February, 1962 Mumbai (Maharashtra), India  
**Family Status** Dr. S.S.Tomar (husband) Professor of Physics, Varsha Singh (daughter)  
MBBS, Arjun Singh (son) studying in XI Std.  
**Education** **Throughout first class in whole academic carrier.**  
**Ph.D-** Jiwaji University, Gwalior, 1989.  
**M.Phil-** Jiwaji University, Gwalior, 1987.  
**M.Sc.(Physical Chemistry)-**Institute of Science, Mumbai University,1985.  
**B.Sc. (Hons.)-** Mithibai College, Mumbai University, 1983.  
**DCA -** HRD, Government of India sponsored, 1996.

**Field of specialization** Physical Chemistry

**Carrier profile** Teaching & research work

**Teaching Experience** 20 Years

**1993-present-** Teaching PG & M.Phil classes in School of Studies in Chemistry, Jiwaji University, Gwalior.

**1990-1993-** Taught UG & PG classes as Assistant Professor in the Government of M.P. Higher Education.

**Research work experience** 24 Years

**1990-present-** Research work is mainly focused on the material synthesis, their characterization and application of zeolites in various fields.

**1986-1989-** Ph. D. work was on “Studies on anion exchange selectivities in non-aqueous and partially aqueous solvents”.

**Award-** **1989-**Young Scientist Convention award, XXVI Annual Convention of Chemist, Indian Chemical Society, Indore.

### **National & International visits**

Visited Italy to present a research paper in the International Clay Conference, 2009, visited Tamilnadu as an UGC Expert Committee Member for the approval of Deemed University March, 2009, Chhattisgarh as an Expert Committee Member for the approval of Private University, Nov. 2009 & as an UGC Expert committee member for the approval of SAP programme, in the Chemistry Department, Burdwan University, West Bengal .

### **Life membership of Professional Society**

ICC (Agra), ICS (Kolkata), ISC (Kolkata), IANCAS-BARC, (Mumbai), ITAS-BARC (Mumbai), AIEPA (USA).

### **Professional activities of scientific organizations- National / International**

Reviewer of Desalination, an Elsevier International Journal, USA, 2009.  
Elected member of General body of Indian Council of Chemists, Agra, 2009  
Member of research paper review committee of Journal of Indian Chemical Society, Kolkata Member of research paper review committee of Indian Journal of Chemistry, New Delhi.  
Subject expert for M.Phil.&Ph.D. of Dr. B. R. Ambedkar University, Agra & R.T.M. Nagpur University, Nagpur.

### **Training programme**

- 2007** Training course on “Safety Aspects in Research Applications of Ionizing Radiations” conducted by Radiological Physics and Advisory Division, BARC, Mumbai.
- 2004** National workshop on Intellectual Property Rights Issue held at Jiwaji University, Gwalior.
- 2001** Training Program on “Maintenance of Laboratory Instruments” held at USIC, Jiwaji University.
- 1996** Faculty Development Programme for Teachers of Engineering /Polytechnique & Science sponsored by NSIEDB, Department of Science & Technology, New Delhi.

### **Research Projects Ongoing**

- 2010-2013** “Synthesis and characterization of zeolites and their applications”.  
**Major Research Project funded by DRDO, New Delhi**
- 2009-2012** “Synthesis, characterization and role of Zeolites in the speciation and migration of toxic elements”.  
**Major Research Project funded by UGC, New Delhi.**
- 2009-2012** “Synthesis and characterization of nanoporous materials and their application for the removal & speciation of trace metal ions present in the aqueous waste”.  
**Major Research Project funded by MPCST, Bhopal (M.P.)**
- 2009-2011** “Studies on zeolite mediated synthesis of biologically active compounds of defence interest”.  
**Major Research Project funded by DRDE, Gwalior, (M.P.)**

### **Research Projects completed**

- 2006-2010** “Synthesis and characterization of colloids and their role in radionuclide migration”.  
**Major Research Project funded by Department of Atomic Energy, Bhabha Atomic Research Center, Mumbai.**
- 2004-2007** “Sorption of homologues of radionuclides from different aqueous waste solution using synthetic inorganic ion- exchangers”.  
**Major Research Project funded by UGC, New Delhi.**
- 1999-2003** “Sorption of radionuclides from different aqueous waste solution using synthetic inorganic ion-exchanger”.  
**Major Research Project funded by Department of Atomic Energy, Bhabha Atomic Research Center, Mumbai.**
- 1999-2001** “To study ion exchange behavior & catalytic properties of some mica minerals”.  
**Major Research Project funded by UGC, New Delhi.**

### **National Conference/ Workshop organized**

- 2005** National Workshop Organized on “Thermal Analysis” sponsored by BARC, Mumbai, December 2005.
- 2005** National Conference Organized on “Electrodics & Electrode Kinetics” sponsored by Jiwaji University, Gwalior, DRDO, MOEF, UGC, DST, & CSIR, New Delhi, November 2005.
- 2001** 46<sup>th</sup> National Workshop Organized on “Radiochemistry and applications of Radioisotopes” sponsored by BRNS, BARC, Mumbai, December 2001.

### **Research papers published**

More than 30 research papers published in the National & International Journals: viz; Journal of Colloid and Interface Science, Journal of Contaminant Hydrology, Microporous and Mesoporous Materials, Journal of Hazardous materials, Desalination, Russian Journal of Physical Chemistry , Journal of Radioanalytical & Nuclear Chemistry & in National Journals: Indian Journal of Chemistry, Journal of Indian Chemical Society, Journal of Environmental Science & Engineering, Journal of Applied Geochemistry, Journal of Indian Council of Chemists.

### **Abstracts published in the proceedings of National & International conferences**

- International Conference on Green Technologies for Greener Environment, Chaudhary Charan Singh University, Meerut, India. 27-30 January, 2010.
- International conference on Recent Advances in Environmental Protection, Agra, India 17-19 December, 2009.
- XIV International Clay Conference (ICC) – Italy 2009, Volume-I, P-457.
- Nuclear and Radiochemistry Symposium, NUCAR – 2009, G-17, p-629.
- Nuclear and Radiochemistry Symposium, NUCAR – 2007, CA-1, p-185.

- DAE-BRNS Biennial Symposium on Emerging Trends in Separation Science and Technology, SESTEC-2006, I-13, p-304.
- 50<sup>th</sup> National Symposium on “Thermal Analysis” 2006, H-1, p-365.
- International Conference on “Application of Radiotracers in Chemical Environmental and Biological Sciences (ARCEBS 06)” 2006, CHEM-49, p-113.
- National Conference on Electrode & Electrode Kinetics, 2005, OP-25, p-71.
- Solid state symposium, 2003, bp-23, p-77.
- Indian Science Congress-2002.
- Annual Research Seminar-2001.
- Annual Research Seminar-2001.
- IXX Conference, Indian Council of Chemists, 2000.
- Abstracts 1992, Nuclear and Radiochemistry Symposium, IA-20, p-341.
- Abstracts 1991, VI M.P. Young Scientist Congress, Chem.-77.
- Abstracts 1989, XXVI Annual convention of Chemists, 4.12/D-17.
- Abstracts 1989, IV M.P. Young Scientist Congress, Chem.-14.
- Abstracts 1988, VIII annual Conference, Indian Council of Chemists, AO-36, p.18.

#### **Papers presented in National & International Conferences / Symposium**

- 2010** Intellectual Property Rights Awareness Workshop, Jiwaji University, Gwalior, India. March 05, 2010.
- 2010** International Conference on Green Technologies for Greener Environment, Chaudhary Charan Singh University, Meerut, India. 27-30 January 2010.
- 2009** International conference on Recent Advances in Environmental Protection, Agra, India. 17-19 December, 2009.
- 2009** XIV International Clay Conference,  
Held at Castellaneta Marina (TA), Italy 14-20 June 2009.
- 2009** National Symposium on Advances in laser spectroscopy  
Held at Dr. H.S.G. Vishwavidyalaya, Sagar (M.P.) 27-28 February 2009.
- 2009** Nuclear and Radiochemistry Symposium (NUCAR) Held at SVKM's Mithibai College, Vile Parle (W), Mumbai. 7-10 January 2009.
- 2007** Nuclear and Radiochemistry Symposium (NUCAR) Held at M.S. University, Vadodara (Gujarat), CA-1, p-185, 14-17 February 2007.
- 2006** DAE-BRNS Biennial Symposium on Emerging Trends in Separation Science and Technology, SESTEC-2006, I-13, p-304, 29<sup>th</sup> Sept. -1<sup>st</sup> October, 2006. Held at BARC, Mumbai-400085.
- 2006** 50<sup>th</sup> National Symposium on “Thermal Analysis” H-1, p-365, 6<sup>th</sup> - 8<sup>th</sup> Feb., 2006. Held at University of Rajasthan.

- 2006** International Conference on “Application of Radiotracers in Chemical Environmental and Biological Sciences (ARCEBS 06)” held at Saha Institute of Nuclear Physics, Kolkata, India 23-27 January 2006. Poster “Recovery of Pd(II) from aqueous waste using inorganic ion- exchanger”.
- 2005** National Conference on “Electrodics & Electrode Kinetics” OP-25,p-71, 25<sup>th</sup> –27<sup>th</sup> November, 2005. Held at Jiwaji University, Gwalior (M.P.)
- 2003** Solid state symposium, bp-23, 26-30 December, 2003. Held at Jiwaji University, Gwalior (M.P.)
- 2001** Nuclear and Radiochemistry Symposium (NUCAR), Held at University of Pune, 7-10 February 2001.
- 1999** Department of Atomic Energy Symposium on “Nuclear and Radiochemistry”, Held at Andhra University, Vishakhapatnam (A.P.) – 1999.
- 1989** IV Young Scientist Congress, Held at APS University, Rewa, (M.P.)-1989.
- 1989** XXVI Annual convention of Chemists, Indian Chemical Society, Held at Devi Ahilya Bai University, Indore (M.P.) –1989.
- 1988** VIII annual Conference, Indian Council of Chemists, Held at Venkateswara University, Tirupati (A.P.)-1988.

### **Establishment of Radioactive laboratory (Type C) in the Department**

Recently a Radioactive laboratory approved by Department of Atomic Energy, Atomic Energy Regulatory Board, BARC, Mumbai has been developed by me. In this laboratory experimental work with radioactive isotopes having relatively low activity (microcurie level) will be carried out. This laboratory is very useful to carryout experimental work with radionuclides.

### **Research Interest**

My research work is mainly focused on the synthesis, characterization and applications of Mesoporous, microporous & nanomaterials (Zeolites, colloids etc). Recently various shape and size selective materials by solution route and microwave method have been synthesized. The characterization of the synthesized materials is carried out by different techniques viz; X-Ray diffraction, BET surface area analysis, Fourier Transform- Infrared spectroscopy, Transmission Electron Microscopy, Site density measurement, EDAX etc. Through characterization the detailed morphology of the materials can be studied. I later elaborated my studies to use these materials for the recovery of metal ions (Radionuclides as well as toxic trace metal ions) from the environment (sea water and underground water). The most important benefit of the use of these materials for the removal of metal ions is that they are suppose to be present in the underground water by means of the disintegration of the rocks. They have tendency of interaction with the metal ions and hence retard migration of the metal ions in the environment. These materials are also used in organic reactions as catalyst to study the catalytic efficiency in the synthesis of various transformations, in degradation studies on stimulants of chemical warfare agents and to explore the applications in the field of selective hydrolysis, oxidations and transformation of C-C, C-P, C-S, P-N, C-Si and C-N bond.

Also the speciation of radionuclide as well as trace metal ions by using different softwares such as MINTEQA-2, FITEQL and HYPERQUAD is studied. By this study the exact chemical form of the particular metal ion could be analyzed.

### **Teaching Interest**

I have a long-standing interest in student- related and educational activities and take student mentoring very seriously, from the undergraduate students to post graduate students. I still communicate with most of the students to whom I have taught over past 19 years.

I teach both basic and advanced courses in Physical Chemistry, with a focus on quantum chemistry, thermodynamics, surface chemistry, electrochemistry etc. I'm also teaching other advanced courses related to my field of interest, including molecular symmetry and group theory, advanced chemical kinetics etc. Some other important topics which are related with me are nuclear chemistry and photochemistry.

Based on my student interactions, I know it would be a real pleasure interacting with students on a more-regular basis.

## REFERENCES

### **Prof. Mazaahir Kidwai**

Vice- Chancellor  
Jiwaji University, Gwalior  
(M.P.) – 474011, INDIA  
E-mail: kidwai\_chemistry@yahoo.co.uk  
Tel: +91-751-2442701  
Fax+91-751-2341450

### **Prof. M. P. Kaushik**

Scientist 'G', Associate Director  
Head of Process Technology Development Division  
Defence Research & Development Establishment  
Jhansi Road, Gwalior-474002 (MP), INDIA  
E- Mail ID: mpkaushik@rediffmail.com  
Tel.: +91-751-2343972, Fax: +91-751-2341148

### **Dr. B.S.Tomar**

Head, Actinide Chemistry Section  
Radiochemistry Division,  
Bhabha Atomic Research Centre  
Mumbai -400 085, INDIA  
E-mail ID: bstomar1957@gmail.com,  
bstomar@barc.gov.in  
Tel: +91-22-25593862 (O),  
+91-22-25527629 (R)

### **Prof. S. M. Khopkar**

Retired Professor, Department of Chemistry,  
Indian Institute of Technology,  
Powai, Bombay 400076, India  
6/303, Devdarshan Co-op. Hsg. Soc.,  
Dongripada, Ghodbander Road,  
Thane- 400 601, India.  
E-mail ID: drkhopkar@yahoo.com  
Tel: +91-22-25974067, 56212998,  
Mob: +91-9324046970

### **Prof. David L. Bish**

Department of Geological Sciences  
Indiana University, 1001E 10<sup>th</sup> St.  
Bloomington, IN 47405  
Tel: (812) 855- 2039  
E-mail: bish@indiana.edu

### **Prof. Jeff Huges**

Soil Science  
School of Environmental Sciences  
University of Kwazulu- Natal  
Private Bag Xo1, Scottsville 3209,  
Tel: +27(0) 332605422  
Fac Simlle: +27(0) 332605426  
E-mail: hughesj@ukzn.ac.za

## Publications of last ten years

- 2010** Sorption of  $^{137}\text{Cs}$ ,  $^{133}\text{Ba}$  and  $^{154}\text{Eu}$  on synthesized sodium aluminosilicate (Na-AS).  
B. K. Singh, Radha Tomar, Sumit Kumar, Aishwarya Jain, B.S. Tomar and V. K. Manchanda, Journal of Hazardous Materials, 178 (2010) pp. 771-776 .
- 2010** Removal of thorium(IV) from aqueous radioactive waste using synthetic nanosize mordenite material by sorption treatment.  
Pankaj Sharma and Radha Tomar, Theories and Applications of Chem. Eng., 16 (2010) pp. 865.
- 2010** Sorption of toxic metals on sodium aluminosilicate (NAS).  
Reeta Bhadoria, B.K.Singh and Radha Tomar, Desalination, 254 (2010) pp. 192-200.
- 2010** Sorption of homologues of radionuclides on synthetic ion exchangers.  
B. K. Singh, Renu Tomar, S. S. Tomar and Radha Tomar, Journal of Contaminant Hydrology (Communicated).
- 2010** Effect of humic acid on sorption of the trace metal ions by sodium aluminosilicate.  
B.K.Singh, Radha Tomar and B.S.Tomar, Desalination (Communicated).
- 2009** Synthesis and characterization of an analogue of heulandite: Sorption applications for thorium(IV), europium(III), samarium(II) and iron(III) recovery from aqueous waste.  
Pankaj Sharma, Gurpreet Singh and Radha Tomar, Journal of Colloid and Interface Science, 332 (2009) pp. 298-308.
- 2009** Synthesis and characterization and role of magnetite in Radionuclide Migration in the environment: Effect of humic acid.  
B.K.Singh, Aishwarya Jain, Sumit Kumar, B.S.Tomar, Radha Tomar, V.K.Manchanda and S. Ramanathan, Journal of Contaminant Hydrology, 106 (2009) pp. 144-149.
- 2009** Microemulsion- Microwave Synthesis of template free zeolite and its application for the sorption of toxic metal ions.  
S.K.Singh, S.S.Tomar and Radha Tomar, Journal of Indian Chemical Society, 86 (2009) pp.1-4.
- 2009** Biological and medicinal properties of grapes and their bioactive constituents.  
M. Yadav, A. Bhardwaj, S. Jain, R. Nagpal, M. Puniya, R Tomar, V. Singh, O. Parkash, G.B.K.S. Prasad, F. Marotta and H. Yadav, Journal of Medicinal Food, 12 (3) (2009) pp. 473-484.



- 2009** Effect of High performance liquid chromatography separated constituents of *Eugenia. jambolana* on glycemic status in streptozitocin- induced diabetic mice.  
M. Yadav, R Tomar, S. Jain, G.B.K.S. Prasad, and H. Yadav, Indian journal of Nephrology (In Press).
- 2009** Comparative study on Hypoglycemic and Anti-hyperglycemic effect of separate Activity of Various extract of *E. jambolana* seed, *M. charantia* fruits, *G. sylvestre* and *Trigonella foenum graecum* seed in rats.  
M. Yadav, R Tomar, S. Jain, G.B.K.S. Prasad, and H. Yadav, Journal of Applied Chemistry and Biotechnology (Accepted).
- 2009** Hypoglycemic activity of water extract of *Gymenema sylvestre* in normal and diabetic rats.  
M. Yadav, R Tomar, S. Jain, G.B.K.S. Prasad, and H. Yadav, Indian Journal of Experimental Biology (Communicated, 2009).
- 2008** Synthesis and morphological studies of nanocrystalline MOR type zeolite Material.  
Pankaj Sharma, P. Rajaram and Radha Tomar, Journal of Colloid and Interface Science, 325 (2008) pp. 547-557.
- 2008** Synthesis and application of an analogue of mesolite for the removal of uranium (VI), thorium (IV), and europium (III) from aqueous waste.  
Pankaj Sharma and Radha Tomar, Microporous & Mesoporous Materials, 116 (2008) pp. 641- 652.
- 2008** Comparative study of Hypoglycemic & Anti-hyperglycemic activity of various extracts of fenugreek seeds in rats.  
M. Yadav, R Tomar, S. Jain, G.B.K.S. Prasad, and H. Yadav, Asian Journal of Biochemistry, 3 (2008) pp. 182-187.
- 2008** Synthesis, Characterization and role of magnetite in Cs migration in environment: Effect of humic acid.  
B.K. Singh, Aishwarya Jain, Sumit Kumar, B.S.Tomar, Radha Tomar, V.K.Manchanda and S. Ramanathan, Journal of Applied Geochemistry, 10 (2A) (2008) pp. 507- 513.
- 2007** Effect of temperature on sorption behavior of Sodium Potassium Fluorophlogopite for the heavy metal ions  $Cd^{2+}$ ,  $Hg^{2+}$  and  $Pb^{2+}$ .  
Radha Tomar, Dinesh Sharma, S. Verma & Pankaj Sharma, Russian Journal of Physical Chemistry, 82 (2007) pp.1-7.

- 2007** Restriction of pesticidal movement in contaminated soil and water.  
Deepesh Bhardwaj, Pankaj Sharma & Radha Tomar, Indian Journal of Chemistry, 46A (2007) pp. 1796 -1800.
- 2007** Removal of chromium (III), iron (III) and nickel (II) by synthetic analogue of mica mineral sodium potassium fluorophlogopite.  
Radha Tomar, Reeta Bhadoria, Sunita Verma & Pankaj Sharma, Journal of Indian Chemical Society, 84 (2007) pp.381-384.
- 2007** Separation of oxoanions from mixed aqueous solvents using strongly basic anion exchanger Amberlite IRA-400 in nitrate form.  
Radha Tomar, Pankaj Sharma & Vandana Kushwah, Indian Journal of Chemistry, 46A (2007) pp.624-627.
- 2007** Recovery of valuables Pd(II) and Ru(III) from aqueous waste using inorganic ion-exchanger.  
Pankaj Sharma, Deepesh Bhardwaj, Renu Tomar & Radha Tomar, Journal of Radioanalytical & Nuclear Chemistry, 274(2) (2007) pp.281-286.
- 2006** Studies on the crystallographic changes in an analogue of aluminosilicate mineral Muscovite on sorption of,  $\text{UO}_2^{2+}$ ,  $\text{Th}^{4+}$  &  $\text{Ru}^{3+}$   
Radha Tomar, Pankaj Sharma, Pratibha Sharma & Renu Tomar, Indian Journal of Chemistry, 45A (2006) pp.1400-1404.
- 2006** Sorption and desorption behaviour of  $\text{UO}_2^{2+}$ ,  $\text{Th}^{4+}$  and  $\text{Ru}^{3+}$  onto synthetic analogue of mica- mineral Muscovite.  
Pratibha Sharma, Pankaj Sharma, Renu Tomar & Radha Tomar, Journal of Radioanalytical & Nuclear Chemistry, 268(2) (2006) pp. 329-336.
- 2006** Studies on the sorption of Zn (II) on the synthetic gel, sodium potassium fluorophlogopite.  
Dinesh Sharma, Sunita Verma, Pankaj sharma & Radha Tomar, Journal of Indian Chemical Society, 83 (2006) pp. 405-408.
- 2005** Studies on the sorption of As (III) on the synthetic gel sodium potassium fluorophlogopite.  
Dinesh Sharma, Radha Tomar & Sunita Verma, Journal of Environmental Science & Engineering, 47(1) (2005) pp.37-42.

- 2003** Sorption of Am (III), U (VI) and Cs (I) on sodium potassium fluorophlogopite an analogue of the fluorine mica mineral.  
Radha Tomar, Anamika Saxena, M.S. Murali and J.N. Mathur, Journal of Radioanalytical & Nuclear Chemistry, 258 (2003) pp.65-72.
- 2002** Studies on the sorption of cadmium (II) on the synthetic gel potassium fluorophlogopite.  
Radha Tomar, Dinesh Sharma, Anamika Saxena & Pratibha Sharma, Journal of Indian Chemical Society, 79 (2002) pp. 307-308.
- 2001** Studies on the sorption of Pb(II) on the synthetic gel potassium fluorophlogopite.  
Dinesh Sharma, Radha Tomar & Anamika Saxena, Indian Journal of Chemistry, 40A (2001) pp. 1348-1349.
- 2001** Studies on the sorption of Hg (II) on the synthetic gel potassium fluorophlogopite.  
Dinesh Sharma, Radha Tomar & Anamika Saxena, Journal of Indian Council of Chemists, 18 (2001) pp. 32- 35.