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Department of Materials Engineering
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Education

- **2000** Ph. D., Institute of Technology, Banaras Hindu University (BHU), Varanasi, India.
- **1994** M. Tech., Indian Institute of Technology (IIT), Kanpur, India
- **1992** M. Sc., Banaras Hindu University (BHU), Varanasi, India.

Research Interests

- X-ray and Neutron Diffraction
- Raman scattering
- Ab-initio first principles computations
- Structural phase transitions in oxide perovskites.
- Ferro-electric, Anti-ferroelectric, Piezoelectric and quantum para-electric materials
- Multiferroics
- Ruthenate magneto-superconductors
- Magnetic shape memory alloys

Professional Experience

- **November 2007 onwards**, Assistant Professor, Indian Institute of Science, Bangalore, India
- **April 2006 onwards**, Alexander von Humboldt Fellow at Department für Geo- und Umweltwissenschaften, Sektion Kristallographie AG Fehlordnungskristallographie und Neutronenstreuung, LMU München
- **May 2005 onwards: Reader** at School of Materials Science and Technology, Institute of Technology, Banaras Hindu University, Varanasi-221005, India.
- **31st July, 2002 onwards: Lecturer** at School of Materials Science and Technology, Institute of Technology, Banaras Hindu University, Varanasi-221005, India.
- **April 2002 –July 2002:** Post doctoral fellow at Tel Aviv University, Israel

Professional Activities

- Life Member, Indian Crystallographic Association

List of Publications

1. Ajay Kumar Kalyani, Rohini Garg and **Rajeev Ranjan**
 “Competing A-site and B-site driven ferroelectric instabilities in the (1-x)PbTiO₃-(x)BiAlO₃ system”
Appl. Phys. Lett. (2009) in Press
2. Rohini Garg, Anatoliy Senyshyn, Hans Boysen, and **Rajeev Ranjan**
 “Structure of the noncubic phase in the ferroelectric state of Pr-substituted SrTiO₃”
Phys. Rev. B **79** (2009) 144122
3. **Rajeev Ranjan**, Hasan Sadat Nabi and Rossitza Pentcheva
 “First principles study of magnetism in divalent Eu perovskites”
J. Appl. Phys. **105** (2009) 053905
4. Rohini Garg, Anatoliy Senyshyn, Hans Boysen and **Rajeev Ranjan**
 “Structure and phase transition of Na_{0.5}La_{0.5}TiO₃”
J. Phys.: Condens. Matter **20** (2008) 505215
5. **Rajeev Ranjan**
 “Subtle structural distortions in some dielectric perovskites” (invited review article)
Journal of the Indian Institute of Science **88** (2008) 211
6. **Rajeev Ranjan**, Rohini Garg, Rudi Hackl, Anatoliy Senyshyn, Elmar Schmidbauer, Dmytro Trots, and Hans Boysen
 “Onset of spontaneous electrostrictive strain below 520 K Pr-doped SrTiO₃.”
Phys. Rev. B **78** (2008) 092102
7. **Rajeev Ranjan**, Rudi Hackl, Amreesh Chandra, Elmar Schmidbauer, Dmytro Trots, and Hans Boysen
 “High temperature relaxor ferroelectric behaviour in Pr doped SrTiO₃”
Phys. Rev. B **76** (2007) 224109
8. **Rajeev Ranjan**, Hasan Sadat Nabi and Rossitza Pentcheva
 Electronic structure and magnetism of EuTiO₃: a first principles study,
J. Phys.: Condens. Matter **19** (2007) 406217
9. **Rajeev Ranjan**, Anatoliy Senyshyn, Hans Boysen, and Friedrich Frey
 “Structural stability of conducting oxide CaRuO₃ at high temperatures”
Appl. Phys. Lett **90** (2007) 251913.
10. S. Banik, **R. Ranjan**, A. Chakrabarti, S. Bhardwaj, N. P. Lalla, A. M. Awasthi, V. Sathe, D. M. Phase, P. K. Mukhopadhyay, D. Pandey, and S. R. Barman
 “Structural studies on Ni_{2+x}Mn_{1-x}Ga”
Phys. Rev. B **75** (2007) 104107

11. Rajeev Ranjan, S. Banik, S. R. Barman, U. Kumar, P. K. Mukhopadhyay, and Dhananjai Pandey
 “Powder x-ray diffraction study of the thermoelastic martensitic transition in $\text{Ni}_2\text{Mn}_{1.05}\text{Ga}_{0.95}$ ”
Phys. Rev. B. **74** (2006) 224443
12. **Rajeev Ranjan**, Anatoliy Senyshyn, Hans Boysen, Carsten Baetz and Friedrich Frey
 “Crystal structures of $\text{Na}_{1/2}\text{Ln}_{1/2}\text{TiO}_3$ (Ln: La, Eu, Tb)”
J. Solid State Chem. **180** (2006) 995
13. **Rajeev Ranjan**, Anupriya Agrawal, Anatoliy Senyshyn and Hans Boysen
 “Crystal structures of high temperature quantum paraelectrics $\text{Na}_{1/2}\text{Nd}_{1/2}\text{TiO}_3$ and $\text{Na}_{1/2}\text{Pr}_{1/2}\text{TiO}_3$ ”
J. Phys.: Condens. Matter **18** (2006) L515.
14. **Rajeev Ranjan**, Anupriya Agrawal, Anatoliy Senyshyn and Hans Boysen
 “Phases in the system $\text{Na}_{1/2}\text{Nd}_{1/2}\text{TiO}_3\text{--SrTiO}_3$: a powder neutron diffraction study”
J. Phys.: Condens. Matter **18** (2006) 9679
15. V. P. S. Awana, **Rajeev Ranjan**, Rajeev Rawat, L. S. Sharath Chandra, M. Peurla, V. Ganesan, H. Kishan, D. Pandey, R. Laiho, E. Takayama-Muromachi and A. V. Narlikar
 “Anomalous lattice expansion of $\text{RuSr}_2\text{Eu}_{1.5}\text{Ce}_{0.5}\text{Cu}_2\text{O}_{10-\delta}$ (Ru-1222) magneto-superconductor: A low temperature x-ray diffraction study”
Physica C **445-448** (2006) 97.
16. S. Banik, A. Chakrabarti, U. Kumar, P. K. Mukhopadhyay, A. M. Awasthi, **R. Ranjan**, J. Schneider, B. L. Ahuja, and S. R. Barman
 “Phase diagram and electronic structure of $\text{Ni}_{2+x}\text{Mn}_{1-x}\text{Ga}$ ”
Phys. Rev. B **74** (2006) 085110
17. Amreesh Chandra, **Rajeev Ranjan**, D. P. Singh, Neeraj Khare and Dhananjai Pandey
 “The effect of Pb^{2+} substitution on the quantum paraelectric behaviour of CaTiO_3 ”
J. Phys. Condens. Matter **18** (2006) 2977
18. Sanjay Kumar Mishra, **Rajeev Ranjan**, Dhananjai Pandey and H. T. Stokes
 “Resolving the controversies about the “nearly cubic” and other phases of $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ ($0 \leq x \leq 1$): I. Room temperature structures”
J. Phys. Condens. Matter **18** (2006) 1885
19. Sanjay Kumar Mishra, **Rajeev Ranjan**, Dhananjai Pandey, R. Ouillon, J-P. P-Lucarre, and P. Pruzan,
 “Resolving the controversies about the “nearly cubic” and other phases of $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ ($0 \leq x \leq 1$): II. Comparison of phase transition behaviours for $x=0.40$ and 0.43 ”
J. Phys. Condens. Matter **18** (2006) 1899
20. Ragini, Akhilesh Kumar Singh, **Rajeev Ranjan** and D. Pandey
 “Monoclinic Phase in the $\text{Pb}(\text{Zr}_x\text{Ti}_{1-x})\text{O}_3$ ceramics”

Ferroelectrics 325 (2005) 35

21. P. Ranson, R. Ouillon, J.-P. Pinan Lucarre, Ph. Pruzan, Sanjay Kumar Mishra, **Rajeev Ranjan** and Dhananjai Pandey
 “The Various Phases of the System $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ ”
J. Raman Spectroscopy 36 (2005) 898
22. Sanjay Kumar Mishra, **Rajeev Ranjan**, D. Pandey, R. Ouillon, J.-P. Pinan Lucarre, P. Ranson, and Ph. Pruzan
 “A Combined X-Ray Diffraction and Raman Scattering Study of the Phase Transitions in $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ ($x = 0.04, 0.06, \text{ and } 0.12$)”
J. Solid State Chem. 178 (2005) 2846
23. **Rajeev Ranjan** and Akansha Dwivedi
 “Structure and Dielectric Properties of $(\text{Na}_{0.5}\text{Bi}_{0.5})_{1-x}\text{Ba}_x\text{TiO}_3$: $0.00 \leq x \leq 0.10$ ”
Solid State Communications 131 (2005) 394
24. **Rajeev Ranjan**, Akhilesh Kumar Singh, Ragini, and Dhananjai Pandey
 “A Comparison of the Cc and R3c Space Groups for the Superlattice Phase of $\text{Pb}(\text{Zr}_{0.52}\text{Ti}_{0.48})\text{O}_3$ ”
Physical Review B 71 (2005) 092101.
25. Ragini, **Rajeev Ranjan**, S. K. Mishra, and D. Pandey
 “Room Temperature Structure of $\text{Pb}(\text{Zr}_x\text{Ti}_{1-x})\text{O}_3$ around the Morphotropic Phase Boundary Region: A Rietveld Study”
J. Appl. Phys. 92 (2002) 3266.
26. S. K. Mishra, **R. Ranjan**, D. Pandey and B. J. Kennedy
 “A Powder Neutron Diffraction Study of the Antiferroelectric Phase Transition in $\text{Sr}_{0.75}\text{Ca}_{0.25}\text{TiO}_3$ ”
J. Appl. Phys. 91 (2002) 4447.
27. D. M. Hatch, T. Stokes, **Rajeev Ranjan**, Ragini, S. K. Mishra, D. Pandey and B. J. Kennedy
 “Antiferrodistortive Phase Transitions in $\text{Pb}(\text{Ti}_{0.48}\text{Zr}_{0.52})\text{O}_3$: Space Group of the Lowest Temperature Monoclinic Phase”
Phys. Rev. B 65 (2002) 212101-3
28. **Rajeev Ranjan**, Ragini, S. K. Mishra, D. Pandey and B. J. Kennedy
 “Antiferrodistortive Phase Transition in $\text{Pb}(\text{Ti}_{0.48}\text{Zr}_{0.52})\text{O}_3$: A Powder Neutron Diffraction Study”
Phys. Rev. B 65 (2002) R601021-4.
29. R. Oullian, J. -P. Pinan Lucarre, P. Ranson, Ph. Pruzan, Sanjay Kumar Mishra, **Rajeev Ranjan** and D. Pandey
 “A Raman Scattering Study of Phase Transition in SrTiO_3 and in the Mixed $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ at Ambient Pressure From $T=300\text{K}$ down to 8K ”
J. Phys. Condensed Matter 14 (2002) 2079-2092.

30. D. Pandey, **R. Ranjan** and S. K. Mishra, "Antiferroelectric Phase Transitions in $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ ($0.12 < x < 0.43$)" **Frontiers in Materials Physics** (Special Publication for the 75th year of the Indian Journal of Physics) Eds., D. Chakravorty and S. P. Sengupta, Allied Publishers Pvt. Ltd. Vol. 1 (2001) 213-243.
31. **Rajeev Ranjan**, D. Pandey, W. Schuddinck, J. Van Landuyt and G. Van Tendeloo "Room Temperature Crystal Structure of $(\text{Sr}_{1-x}\text{Ca}_x)\text{TiO}_3$: X-Ray, Neutron and Electron diffraction Studies" **J. Solid State Chem.** **162** (2001) 20-28.
32. Sanjay Kumar Mishra, **R. Ranjan**, D. Pandey, R. Ouillan, J.-P. Pinan-Lucarre, P. Ranson and Ph. Pruzan, "A Raman Scattering Study of the Antiferroelectric Phase Transition in $\text{Sr}_{0.70}\text{Ca}_{0.30}\text{TiO}_3$ " **Phys. Rev. B** **64** (2001) 092302.
33. **Rajeev Ranjan**, Sanjany Kumar Mishra and D. Pandey "Antiferroelectric Phase transitions in $(\text{Sr}_{1-x}\text{Ca}_x)\text{TiO}_3$: X-ray Diffraction Studies" **J. Phys. Condensed Matter** **13** (2001) 4250.
34. **Rajeev Ranjan** and Dhananjai Pandey, "Antiferroelectric Phase transitions in $(\text{Sr}_{1-x}\text{Ca}_x)\text{TiO}_3$: Dielectric Studies" **J. Phys. Condensed Matter** **13** (2001) 4239.
35. **Rajeev Ranjan**, Dhananjai Pandey and N. P. Lalla, "Novel Features of $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ Phase Diagram: Evidence for Competing Antiferroelectric and Ferroelectric Interactions" **Phys. Rev. Lett.** **84** (2000) 3726.
36. **Rajeev Ranjan**, D. Pandey, V. Siruguri, P. S. R. Krishna and S. K. Paranjpe, "Novel Structural Features and Phase Transition Behaviour of $(\text{Sr}_{1-x}\text{Ca}_x)\text{TiO}_3$ I. Neutron Diffraction Studies" **J. Phys. Condensed Matter** **11** (1999) 2233.
37. **Rajeev Ranjan** and D. Pandey, "Novel Structural Features and Phase Transition Behaviour of $(\text{Sr}_{1-x}\text{Ca}_x)\text{TiO}_3$ II. X-ray Diffraction Studies" **J. Phys. Condensed Matter** **11** (1999) 2247.
38. B.P. Pokharel, **R. Ranjan**, Dhananjai Pandey, V. Siruguri and S. K. Paranjpe, "Rhombohedral Superlattice Structure and Relaxor Ferroelectric Behaviour of $(\text{Pb}_{0.70}\text{Ba}_{0.30})\text{ZrO}_3$ Ceramics" **Appl. Phys. Lett.**, **74** (1999) 756
39. **Rajeev Ranjan**, Neelam Singh, D. Pandey, V. Siruguri, P. S. R. Krishna, S. K. Paranjpe and Alok Banerjee, "Room Temperature Crystal Structure and Relaxor Ferroelectric Behaviour of $\text{Pb}_{0.5}\text{Ca}_{0.5}\text{TiO}_3$ " **Appl. Phys. Lett.** **70** (1997) 3221-3223.

40. **Rajeev Ranjan** and Jitendra Kumar,
“Formation of Nanosize Iron Particles, Their Morphology and Interaction with Alumina Support Film”
Proceedings of the Science And Technology of Atomically Engineered Materials,
Edited by P. Jena, S. N. Khanna and B. K. Rao, World Scientific, Singapore; pp.159-164,
(1996).