

BIO- DATA

1. **Name:** Joysurya Basu
2. (a) **Date of Birth:** January 02, 1975
(b) **Place of Birth:** Asansol, India
3. **Address :** (a) Present : Department of Chemical Engineering & Materials Science
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4. Educational Qualification : Ph. D.

Examination	School/Institute	University /Board	Year of Passing	Marks	Main Subjects
Madhyamik	R.K. Mission Vidyapith, Purulia	WBBSE	1992	89.7%	Math, PSc., LSc., Beng., Eng.
Higher Secondary	R.K. Mission Residential College, Narendrapur	WBCHSE	1994	76.3%	Phy, Chem, Math, Stat
B.E	Bengal Engineering College (D.U), Howrah		1998	76.9%	Metallurgy
Ph. D.	Indian Institute of Science, Bangalore		2005	7/8.0	Metallurgy

5. Ph. D. Thesis Title

Title : Glass Forming Ability and Thermal Stability: Bulk Zr-based and Marginal Al-based Alloys

Supervisor : Prof. S. Ranganathan

6. Course Credited During Ph. D. :

- (a) Numerical Analysis (MA 251, Credits- 3:0), Grade : A
- (b) Diffraction and Microscopy (MT 203, Credits- 3:0), Grade : B
- (c) Advances in Bio and Electrochemical Corrosion (MT 223, Credits- 3:0) , Grade : A
- (d) Intermetallics (MT 229, Credits- 2:0), Grade : S
- (e) Solidification Processing (MT 255, Credits - 3:0), Grade : A
- (f) Science of Ceramics (MT 241, Credits-3:0), Grade : S
- (g) Symmetry and Structure in the Solid State (SS 205, Credits-3:0), Grade : B

7. Industrial Training & Experience:

- (a) TATA STEEL, India, as Graduate Trainee from July '98 to August '98
- (b) Indian Iron and Steel Company, Burnpur, India as Summer Trainee from June '97 to July '97

8. Research Experience:

- (a) Post-doctoral Research Fellow, Department of Chemical Engineering & Materials Science, University of Minnesota, Minneapolis, USA, Dec, 2004-till date
- (b) Research Specialist, High Resolution Electron Microscopy Group, Institute of Technology Characterization Facility, University of Minnesota, Minneapolis, USA Dec. 2004- till date.
- (c) Research Student, Department of Metallurgy, Indian Institute of Science, Bangalore, India, Aug. 1998- Dec. 2004

9. Teaching Experience:

- (a) Guest lectures on Dynamical Diffraction, Defect Analysis, Sample Preparation Techniques and High Resolution Electron Microscopy in the Graduate Level course offered by Prof. C. Barry Carter. Spring 2006. University of Minnesota.
- (b) Guest lectures on Reciprocal Lattice and Electron Diffraction in the Graduate Level Course offered by Prof. Stuart McKernan. University of Minnesota. Spring 2005.
- (c) Hands on training on Tecnai T12, Tecnai G2 F30 and JEOL 1210 transmission electron microscopes offered to the undergraduate and graduate students as a Research Specialist of Institute of Technology Characterization Facility. University of Minnesota. 2005, 2006 & 2007
- (d) Guest lectures on High-resolution Electron Microscopy & z-contrast imaging in TEM in the graduate level course on Advanced Electron Microscopy, offered by Prof. C. Barry Carter. Spring 2007. University of Minnesota.

10. Awards/ Distinctions

- (a) Award of Excellence in National Science Talent Test, India in 1987
- (b) Award of Excellence in National Science Talent Test, India in 1988
- (c) Award of Excellence in Mathematics Talent Test, India in 1990
- (d) Stood 13th in Madhyamik Examination (WBBSE) in 1992
- (e) Recipient of Sen Gupta Memorial Award at Bengal Engineering College (D.U), Howrah, India in the year 1998

9. Major Research Areas:

Electron Microscopy, Nanowires and nanoparticles, Bulk metallic glasses and composites
Defect analysis in materials

10. Reviewer of International Journals:

- (a) Journal of Materials Science
- (b) Journal of Non-crystalline Solids

11. Member of Professional Bodies

- (a) Microscope Society of America
- (b) Microbeam Analysis Society of America
- (c) Minnesota Microscopy Society
- (d) Materials Research Society, USA

12. Research Publication

1. U.Ramamurty, M.L. Lee, J. Basu and Yi Li, 2002, Embrittlement of a Bulk Metallic Glass Due to Low Temperature Annealing, *Scripta Materialia*, 47(2):107-111
2. Joysurya Basu, D.V. Louzguine, A. Inoue and S. Ranganathan, 2003, Nanocrystallisation and Nanoquasicrystallisation in (Ti/Hf)-Zr-(Cu/Ni) Ternary Alloys, *MRS Symp. Proceedings*, T. Egami, A. L. Greer, A. Inoue and S. Ranganathan (Eds.)754, 12.6.1-12.6.6
3. J. Basu, N. Nagendra, Y. Li, and U. Ramamurty, 2003, Microstructure and Mechanical Properties of Partially-Crystallized La-based Bulk Metallic Glass, *Philosophical Magazine*, 83(15),1747-1760
4. Joysurya Basu and S. Ranganathan, 2003, Bulk Metallic Glasses: A New Class of Engineering Materials, *Sadhana*, 28 (3 & 4), 783-798.
5. U. Ramamurty, R. Raghavan, J. Basu and S. Ranganathan, 2003, Microstructural Evolution and Mechanical Property Variation with Annealing in Bulk Metallic Glasses, *Proceedings of the Symposium on Microstructural Design of Advanced Materials*, M. A. Meyers, R. O. Ritchie and M. Sarikaya (Eds), Elsevier Science Ltd. The Netherlands , TMS, 199-210
6. R. Raghavan, U. Ramamurty, J. Basu, S. Ranganathan and N. Nishiyama, 2004, Structural Relaxation and Crystallization in a Pd₄₀Cu₃₀Ni₁₀P₂₀ Bulk Metallic Glass, *MRS Symp. Proceedings*, R. Busch, T. Hufnagel, J. Eckert, A. Inoue, W. L. Johnson and A. R. Yavari (Eds.) 806, 63-67
7. Joysurya Basu, D.V.Louzguine, A. Inoue and S. Ranganathan, 2004, Synthesis and Devitrification of Glassy Zr-Ti-Ni and Zr-Hf-Ni Ternary Alloys, *J. Non-Cryst Solids*, 334-335C, 270-275

8. Joysurya Basu and S. Ranganathan, 2004, Crystallisation in Al-ETM-LTM-La Metallic Glasses, *J. Intermetallics*, 12, 1045-1050
 9. Joysurya Basu, G. K. Dey, S. Banerjee and S. Ranganathan, 2005, Phase Evolution in Quaternary Zr-Cu-Ni-Al and Quinary Zr-Cu-Ni-Al-Pd Bulk Metallic Glass Forming Alloys, *Trans. Ind. Inst. Met.* 58(1), 61-70 .
 10. R. Raghavan, J. Basu, N. Nishiyama, S. Ranganathan and U. Ramamurty, 2006, Thermal Relaxation in a Pd₄₀Cu₃₀Ni₁₀P₂₀ Metallic Glass, *Trans. Ind. Inst. Met.* 59(2), 295-302.
 11. Joysurya Basu and S. Ranganathan, 2006, Glass Forming Ability and Stability of Ternary Ni-early Transition Metal (Zr/Ti/Hf) Alloys, *Acta Mater.* 54(14), 3637-3646.
 12. R. Divakar, Joysurya Basu and C. Barry Carter, 2006, Growth of ZnO Nanorods: A TEM Study, *Proc. Microscopy & Microanal.* 2006, Vol. 12, Supp. 2, 698 CD, P. Kotula, M. Marko, J. H. Scott, R. Gauvin, D. Beniac, G. Lucas, S. McKernan and J. Shields (Eds.), Cambridge University Press, NY, USA
 13. Joysurya Basu, R. Divakar, Sandeep Kumar and C. Barry Carter, 2006, Inversion Domain Boundaries in Wurtzite GaN, *Proc. Microscopy & Microanal.* 2006, Vol. 12, Supp. 2, 1084 CD, P. Kotula, M. Marko, J. H. Scott, R. Gauvin, D. Beniac, G. Lucas, S. McKernan and J. Shields (Eds.), Cambridge University Press, NY, USA
 14. Joysurya Basu, R. Divakar, Julia Deneen, Xinyu Wang, Heiko O. Jacobs and C. Barry Carter, 2006, Interfaces of ZnO Nanowires Grown on Semiconducting Surfaces, *Proc. Microscopy & Microanal.* 2006, Vol. 12, Supp. 2, 694 CD, P. Kotula, M. Marko, J. H. Scott, R. Gauvin, D. Beniac, G. Lucas, S. McKernan and J. Shields (Eds.), Cambridge University Press, NY, USA
 15. Joysurya Basu, Julia Deneen, R. Divakar, Stephan Hofmann, Alan Colli, A. Franciosi and C. Barry Carter, 2006, Defects and Interfaces in ZnSe Nanowires, *Proc. 16th International Microscopy Congress*, Vol-III, 1229, H. Ichinose and T. Sasaki (Eds.), Sapporo, Japan.
 16. Joysurya Basu, B. S. Murty and S. Ranganathan, 2004, Glass Forming Ability: Miedema Approach to (Zr, Ti, Hf)-(Cu, Ni) Binary and Ternary Alloys, *Mater. Sci. Engg.* (accepted for publication)
 17. Joysurya Basu and S. Ranganathan, 2004, Glass Forming Ability and Stability of Ternary Zr, Ti, Hf Alloys : Part II Copper Bearing Systems, *Acta Mater.* (communicated)
 18. Kurtis S. Leschkies, Ramachandran Divakar, Joysurya Basu, Emil Enache-Pommer, Janice E. Boercker, C. Barry Carter, Uwe R. Kortshagen, David J. Norris, Eray S. Aydil, 2007, Photosensitization of ZnO Nanowires with CdSe Quantum Dots for Photovoltaic Devices, *Nano Letters* (Communicated).
- In Preparation
19. Joysurya Basu, R. Divakar, Julia Deneen, Stephan Hofman, Alan Colli, A. Franciosi and C. Barry Carter, 2007, Direct observation of *in situ* growth of ZnSe Nanowire (to be communicated)
 20. Joysurya Basu, R. Divakar, Sandeep Kumar and C. Barry Carter, 2007, Structural Characterization of inversion domain pipes in polycrystalline GaN (to be communicated)
 21. R. Divakar, Joysurya Basu and C. Barry Carter, 2007, Hydrothermal synthesis of nanocrystalline CeO₂ (to be submitted)

13. International Conference Participation

- A. 1st International Conference on Bulk Metallic Glasses, September 23-26, 2000, Singapore.
- B. Materials Research Society Fall Meeting, December 2-6, 2002, Boston, MA, USA.
- C. 8th International Conference on Quasicrystals, September 8-13, 2002, Bangalore, India
- D. 3rd International Conference on Bulk Metallic Glasses, October 12-16, 2003, Beijing, China.
- E. Microscopy & Microanalysis 2006, July 30-August 03, 2006, Chicago, IL, USA

14. Conference Presentation

1. Joysurya Basu, Synthesis and Phase Transformation of Al and Zr- based Metastable Alloys, 13th Annual Symposium on Metallurgical and Materials Research, Metallurgical Society, IISc, Bangalore, October 7-8, 1999
2. Joysurya Basu and S. Ranganathan, Novel Atomic Configurations in Metallics, Indo Egyptian Workshop on Advanced Materials and Their Processing, Hyderabad, November 9-11, 1999
3. Joysurya Basu and S.Ranganathan, Synthesis and Crystallisation of Metastable Alloys in Al-Fe-Ni-La System, International Conference on Bulk Metallic Glasses, Singapore, September 23-26, 2000
4. Joysurya Basu, Synthesis and Stability of Metastable Alloys in Al-Fe-Ni-La System, 14th Annual Symposium on Metallurgical and Materials Research, Metallurgical Society, IISc, Bangalore, October 30-31, 2000
5. Joysurya Basu, D.V. Louzguine, A. Inoue and S. Ranganathan, Ti, Zr Glasses - An Exploration of the Confusion Principle: Nanocrystallisation in Ti-Zr-(Ni/Cu) Ternary Alloys, conference on Perspectives in Physical Metallurgy and Materials Science, Bangalore, July 12-14, 2001
6. Joysurya Basu, Synthesis, Crystallisation and Microstructural Evolution in Al-Fe-Ni-La Glass Forming Alloys, 15th Annual Symposium on Metallurgical and Materials Research, Metallurgical Society, IISc, October 4-5, 2001
7. Joysurya Basu, D. V. Louzguine, A. Inoue and S. Ranganathan, Nanocrystallisation and Nanoquasicrystallisation in (Ti/Hf)-Zr-Ni Ternary Alloys, 8th International Conference on Quasicrystals, September 8-13, 2002, Bangalore, India
8. S. Ranganathan and Joysurya Basu, The role of Atomic Size in Forming Quasicrystals and Metallic Glasses, 40th National Metallurgists Day/ 56th Annual Technical Meeting, November 14-16, 2002, Vadodara, India
9. Joysurya Basu, D. V. Louzguine, A. Inoue and S. Ranganathan, Nanocrystallisation and Nanoquasicrystallisation in (Ti/Hf)-Zr-(Ni/Cu) Ternary Alloys, Materials Research Society Fall Meeting 2002, December 2-6, Boston, USA
10. Joysurya Basu and S. Ranganathan, Crystallisation in Al-ETM-LTM-La Metallic Glasses, 3rd International Conference on Bulk Metallic Glasses, October 12-16, 2003, Beijing, China.
11. S. Ranganathan, J. Basu, J. Saida, D.V. Louzguine, A. Takeuchi and A. Inoue, A Comparison of the Formation of Topologically Close Packed Crystalline, Quasicrystalline and Nanocrystalline Phases in Ternary (Ti, Zr, Hf)-(Cu, Ni) Alloys, 3rd international Conference on Bulk Metallic Glasses, October 12-16, 2003, Beijing, China.

12. Joysurya Basu, Glass Forming Ability: Evaluation and Prediction, 17th Annual Symposium on Metallurgical and Materials Research, Metallurgical Society, IISc, November 6-7, 2003
13. Tripti Biswas, Joysurya Basu, S. Ranganathan and Y. Kawamura, Studies on Nanostructured and Quasicrystalline Mg-Zn-Y Alloys, 41st National Metallurgists Day/57th Annual Technical Meeting, November 14-16, 2003, Kolkata, India.
14. R. Raghavan, U. Ramamurty, J. Basu, S. Ranganathan and N. Nishiyama, Crystallisation and Structural Relaxation in Pd₄₀Cu₃₀Ni₁₀P₂₀ BMG, Materials Research Society Fall Meeting, December 1-5, 2003, Boston, MA, USA.
15. Julia Deneen, Joysurya Basu, Divakar Ramachandran and C. Barry Carter, Nanowire Growth: A Transmission Electron Microscopy Study, MRS Spring Meeting, April 18-21, 2006, San Francisco, CA, USA.
16. R. Divakar, Joysurya Basu and C. Barry Carter, Growth of ZnO Nanorods: A TEM Study, Microscopy & Microanalysis 2006, July 30 – Aug 3, 2006, Chicago, IL, USA.
17. Joysurya Basu, R. Divakar, Sandeep Kumar and C. Barry Carter, 2006, Inversion Domain Boundaries in Wurtzite GaN, Microscopy & Microanalysis 2006, July 30 – Aug 3, 2006, Chicago, IL, USA.
18. Joysurya Basu, R. Divakar, Julia Deneen, Xinyu Wang, Heiko O. Jacobs and C. Barry Carter, 2006, Interfaces of ZnO Nanowires Grown on Semiconducting Surfaces, Microscopy & Microanalysis Meeting, July 30 – Aug 3, 2006, Chicago, IL, USA.
19. Joysurya Basu, R. Divakar, Julia Deneen, Stephan Hofmann, Alan Colli, A. Franciosi and C. Barry Carter, 2006, Defects & Interfaces in ZnSe Nanowires, 16th International Microscopy Congress, September 3-8, 2006, Sapporo, Japan.
20. C. Barry Carter, Joysurya Basu, Ramachandran Divakar, Julia Deneen Nowak, 2006, Use of *in situ* TEM to study nanomaterials, Brazilian MRS Meeting 2006, October 8-12, 2006, Florianopolis, Brazil.
21. R. Divakar, Joysurya Basu and C. Barry Carter, TEM Characterization of ZnO nanorods, 2007, Microscopy of Semiconducting Materials XV, April 02-05, 2007, Churchill College, Cambridge, UK.
22. Joysurya Basu, R. Divakar and C. Barry Carter, *In situ* observation of dewetting and pattern formation of Au and Ag nanocrystalline thin films on reconstructed C- and m-plane of sapphire, 2007, MRS Spring Meeting, April 10-12, 2007, San Francisco, CA, USA.
23. R. Divakar, Joysurya Basu and C. Barry Carter, *In situ* TEM study of dewetting and solid state reactions of nanocrystalline thin film oxides on sapphire, 2007, MRS Spring Meeting, April 10-12, San Francisco, CA, USA.
24. R. Divakar, J. Basu, K. S. Leschkies, E. S. Aydil, D. J. Norris, U. R. Kortshagen and C. Barry Carter, TEM characterization of CdSe quantum dot sensitized ZnO nanowires, 2007, Microscopy & Microanalysis 2007, August 5-9, 2007, Ft. Lauderdale, FL, USA.
25. R. Divakar, Joysurya Basu And C. Barry Carter, Hydrothermal synthesis of cuboidal nanocrystalline ceria, 2007, Microscopy & Microanalysis 2007, August 5-9, 2007, Ft. Lauderdale, FL, USA.

15. Invited Lectures

1. Joysurya Basu, Advanced Electron Microscopy for Materials at the Nanoscale, Department of Mechanical, Materials & Aerospace Engineering, University of Central Florida, Orlando, FL, USA, December 01, 2006

16. References:

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