CURRICULUM VITAE

Dr. Vanarajsinh Jashavantsinh Solanki

Date of Birth **:** 12/10/1984
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Designation **:** Research Scientist
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Academic Details (from present) :

1. Oct 2018 to Conti. :- Research Scientist at K. C. Patel R & D Centre, CHARUSAT Changa, Gujarat 388421

2. July-2018 to Sep-2018 :- Research Associate at Material Research Centre, Indian Institute of Science, Bangalore-560012.

3. July-2016 to July-2018:- National Postdoctoral Fellow at Material Research Centre, Indian Institute of Science, Bangalore-560022.

4. Jan-2016 to June 2016:- Research Associate at Material Research Centre, Indian Institute of Science, Bangalore-560012.

5. Sep-2015-Dec-2015:- Visiting Fellow at Institute of Physics, Bhubaneswar.

6. Aug-2009- Aug-2015:- Doctor of Philosophy in Physics, Title: "Studies of oxide Nanostructures of TiO_2, ZnO, NiO & Ion Beam Patterned Surfaces for Photo-absorption and Resistive Switching Properties".

7. Aug-2008 – June-2009:- Diploma in Advanced Physics (M. Phil.), Institute of Physics, Bhubaneswar, India.

8. 2006 - 2008:- M. Sc in Physics (Passed with 1st class, with specialization in Solid State Physics) Sardar Patel University, Vallabh Vidyanagar, India.

9. 2003 - 2006:- B. Sc in Physics (Passed with 1st class) Hemchandracharya North Gujarat University, Patan, India.

Academic Awards :

1. 2008 - Joint Entrance Screening Test (JEST rank 251)
2. 2016 – DST, National Postdoctoral Fellowship
3. 2017- Best poster award at International Conference on Crystal Ball Vision On Science & Engineering For Societal Upliftment, 7-8 August 2017 CSIR-National Institute of Oceanography, Dona Paula, Goa, India-403004.

Academic Membership :

1. Ion Beam Society of India (IBSI), New Delhi. (Membership No. LM112)

Project Proposals :

1. Experimental and Theoretical Studies on Carbon and Oxide based Hybrid Nanostructures for Multi-functional Applications, DST-SERB as a PI, total cost Rs. 19,20,000 (file no PDF/2016/000306) (Completed)
2. DST-SERB Start up Research Grant as a PI, , total cost Rs. 30,00,000 + overhead, (Submitted)

B.Sc, M.Sc thesis dissertations :

1. Structural investigation of Aluminium thin film deposited via Physical vapour deposition, **Mr. Abubakr H Shaikh, B. Sc. Student from St. Xavier's College, Ahmedabad (2019)**

2. Studies of structural, morphological and optical characteristics of zinc oxide thin films deposited by chemical bath deposition **Mr. Amrendra Kumar Singh, M.Sc Student from Institute of Science and Technology (IOST) Tribhuvan University (TU), Kirtipur, Nepal.**

Selected Publications :

1. Dynamics of surface evolution of rutile TiO_2(110) after ion irradiation, Ashis K. Manna, **Vanaraj Solanki**, D. Kanjilal, and Shikha Varma, Rad. Eff. De. Sol. **174**, 182 (2019),

2. Note: Simultaneous water quality monitoring and degradation of hazardous organic pollutants by **Vanaraj Solanki**, S. B. Krupanidhi and K. K. Nanda, Review of Scientific Instrument **89**, 096102(2018).

3. Topographic Evolution and Scaling Study of ZnO (0001) Single Crystal After Low-Energy Atom Beam Irradiation", by **Vanaraj Solanki**, D. Kabiraj, D. K. Avasthi, and Shikha Varma, Nuclear Instruments and Methods in Physics Research B, **434**, 56-60 (2018).

4. Formation of Anisotropic Nanostructures on Rutile TiO_2(110) Surfaces and Their Photo-Absorption Properties, **Vanaraj Solanki**, Shalik Ram Joshi, Indrani Mishra, D. Kanjilal, and Shikha Varma, Metallurgical and Materials Transactions A 49(7), 3117-3121 (2018).

5. Sequential Elemental De-alloying Approach for the Fabrication of Porous Metal Oxides and Chemiresistive Sensor Thereof for Electronic Listening, **Vanaraj Solanki**, S. B. Krupanidhi, K. K. Nanda, ACS Applied Material and Interfaces **9** (47), 41428-41434 (2017).

6. Experimental Evidence on RH-dependent Crossover from an Electronic to Protonic Conduction, **Vanaraj Solanki**, S. B. Krupanidhi, K. K. Nanda Appl. Phys. Lett. **110**, 263506 (2017)

7. Oxygen Vacancy Mediated Enhanced Photo-absorption from ZnO(0001) Nanostructures fabricated by Atom Beam Sputtering, **Vanaraj Solanki**, Shalik R. Joshi, Indrani Mishra, D. Kabiraj, N. C. Mishra, D. K. Avasthi, and Shikha Varma, J. Appl. Phys. **120**, 054303 (2016)

8. Room Temperature Superparamagnetism in Rutile TiO_2 Quantum Dots : Produced via ECR Sputtering, **Vanaraj Solanki**, I. Mishra, S. R. Joshi, P. Mishra, P. Dash, N. C. Mishra, D. Kanjilal, and Shikha Varma, Nuclear Instruments and Methods in Physics Research B **365**, 82 (2015).

9. Enhanced anomalous Photo-absorption from TiO_2 Nanostructures, **Vanaraj Solanki**, Subrata Maumder, I. Mishra, P. Dash, C. Singh, D. Kanjilal, and Shikha Varma, J. Appl. Phys. **115**, 124306 (2014).

10. Size-dependent optical properties of TiO_2 nanostructures, **Vanaraj Solanki**, Subrata Majumder, Indrani Mishra, Shalik R. Joshi, Dinakar Kanjilal, and Shikha Varma, Rad. Eff. De. Sol. **168**, 518 (2013).

11. ZnO Nanocrystals: Magnetic Study, S. Majumder, **Vanaraj Solanki**, A. Gupta, Shikha Varma, Asian Journal of Physics **19**, 269 (2010).

12. Band gap tailoring of rutile TiO_2 (110) via surface patterning with electron cyclotron resonance sputtering, S. Majumder, D. Paramanik, **Vanaraj Solanki**, B. P. Bag, and Shikha Varma, Appl. Phys. Lett. **98**, 053105 (2011).

13. Formation of Patterns and Scaling Properties of Tantalum Surface after Low Energy Ion Beam Irradiation, S. Majumder, Rama Rao Medicherla, D. Paramanik, **Vanaraj Solanki**, Indrani Mishra, and Shikha Varma, Rad. Eff. Def. Sol. **166**, 592 (2011).

14. Ion Irradiation induced nano patterning on TiO_2 Single Crystal by ECR Sputtering, S. Majumder, D. Paramanik, **Vanaraj Solanki**, Indrani Mishra, D. K. Avasthi, D. Kanjilal, and Shikha Varma, Appl. Surf. Sci. **258**, 4122 (2012).

15. Magnetic Properties of Cu/Ni Bilayer on Si (100) Surface, S. K. Parida, V. R. R. Medicherla, D. K. Mishra, **Vanaraj Solanki**, Shikha Varma, Manoj Kumar Sharma, and Ratnamala Chatterjee, Mat. Foc. **3**, 1 (2014).

16. X-Ray Photoelectron Spectroscopic Study of Bulk $SrTiO_3$, R. R. Mohanta, V. R. R. Medicherla, K. L. Mohanta, N. C. Nayak, **Vanaraj Solanki**, and Shikha Varma, Adv. Scie. Lett. **20**, 703 (2014).

17. Comparison of Core Levels of Bulk and Thin Film of $BaTiO_3$, R. R. Mohanta, V. R. R. Medicherla, K. L. Mohanta, N. C. Nayak, **Vanaraj Solanki**, and Shikha Varma, Adv. Scie. Lett. **20**, 584 (2014).

18. Ion beam induced Chemical and Morphological changes in TiO_2 films deposited on Si(111) surface by Pulsed Laser Deposition, R. R. Mohanta, V. R. R. Medicherla, K. L. Mohanta, Nimai C. Nayak, S. Majumder, **V. Solanki**, Shikha Varma, Komal Bapna, D. M. Phase, and V. Sathe, Appl. Surf. Scie. **325**, 185 (2015).

19. Structural and optical study of MeV Cobalt ion implanted Silicon, Pramita Mishra, **V. Solanki**, Ashutosh Rath, Soumee Chakraborty, Himanshu Lohani, Pratap Kumar Sahoo, Biju Raja Sekhar, Adv. Mat. Lett. **5**, 699 (2014).

20. Effect of thermal annealing on the microstructure and surface morphology of NiO thin film, P. Mallick, B. N. Dash, **Vanaraj Solanki**, Shikha Varma, and N. C. Mishra, Adv. Scie. Enge. Med. **6**, 1118 (2014).

21. Low energy ion beam modification of Cu/Ni/Si(100) surface, S. K. Parida, V. R. R. Medicherla, D. K. Mishra, S. Choudhary, **Vanaraj Solanki**, and Shikha Varma, Bull. Mat. Sci. **37**, 1569 (2014).

22. Study of thickness dependent sputtering in gold thin films by swift heavy ion irradiation, P. Dash, P. K Sahoo, **V. Solanki**, U. B. Singh, D. K Avasthi, Nucl. Inst. Meth. Phys. Res. B **365**, 496 (2015).

23. Ion irradiation induced phase transition of Co in Co/Au multilayers, Vantari Siva, Siddharth S. Sahu, Debi P. Datta, P. C. Pradhan, V. Solanki, M. Nayak, D. Topwal, Kartik Senapati, and P.K. Sahoo, J. Allo. And Comp. 680, 722 (2016)

Conference Proceedings :

1. Reduction of anatase TiO_2 on Si(111) by ion beam sputtering, V. R. R. Medicherla, R. R. Mohanta, K. L. Mohanta, Nimai C. Nayak, S. Choudhary S. Majumder, **Vanaraj Solanki**, Shikha Varma, D. M. Phase, and V. Sathe, AIP Conf. Proc. 1461, 403 (2012) (ISSN- 1551-7616).

2. Bandgap Engineering, Enhanced UV-Vis Absorbance and Higher PL Emission from Ion Beam Modified and Nanodot Patterned Rutile TiO_2 (110) Surfaces, Subrata Majumder, **Vanaraj Solanki**, Indrani Mishra, Shalik R. Joshi, Dinakar Kanjilal, Shikha Varma. AES-ATEMA 2012 Conference Proceedings pp 131-138, (2012) (ISBN 978-0-9879945-0-9).

3. Nano-pattern formation on $SrTiO_3$/Si(111) surface, R. . R. Mohanta, V. R. R. Medicherla, K. L. Mohanta, Nimai C. Nayak, S. S. Acharya, **V. Solanki**, and Shikha Varma. AIP Conf. Proc. 2005, 030006 (2018) (ISSN- 1551-7616)..

4. ZnO hybrid microstructures as dark catalyst, R Hemam, V Solanki, KK Nanda, AIP Conference Proceedings 2115 (1), 030284, (2019) (ISSN- 1551-7616)..

Books Published :

1. Atomic force microscopy fundamentals and applications by Vanaraj Solanki, Abhay dasadia and Pramita Mishra, Lambert Academic Publishing, 2019, ISBN: 978-620-0-24724-7

2. Experimental Techniques for Material Characterization-part-1 Vanaraj Solanki, Abhay dasadia and Pramita Mishra, Lambert Academic Publishing, 2019, ISBN:978-620-0-25440-5

3. Structural Determination of Transition Metal Chalcogenides by Abhay dasadia, Vanaraj Solanki and Brinda Nariya, Lambert Academic Publishing, 2019, ISBN:978-620-0-26714-6

4. Growth and Characterizations of Transition Metal Trichalcogenides by Abhay dasadia and Vanaraj Solanki, Lambert Academic Publishing, 2019, ISBN:978-620-0-23747-7

5. Vacuum Technology, Fundamentals for beginners, Vanaraj Solanki, Pramita Mishra, Ruchita patel, Educreation Publishing, 2019, ISBN 978-93-5373-146-5

Poster :

1. Scaling Studies and pattern formation on Tantalum with Low Energy Ion Beams. S.Majumder, RamaRao Medicherla, **V. Solanki** and Shikha Varma. SHIMEC-2010 Inter University Accelerator Centre (IUAC), New Dehli.

2. XPS, AFM and Optical studies of ion beam induced surface modified TiO2(110) surfaces. **V. Solanki** , S. Majumder, I. Mishra, S.R. Joshi, D. Kanjilal and Shikha Varma. SHIMEC-2012 Inter University Accelerator Centre (IUAC), New Delhi.

3. Size and Oxygen Vacancy Dependent Enhanced Photo-absorbption from TiO_2 Nanostructures, **Vanaraj Solanki**, I. Mishra, S. R. Joshi, P. Mishra, P. Dash, N.C. Mishra, D. Kanjilal, and Shikha Varma, International Conference on Ion Beam Modification of Materials (IBMM-2014), Leuven, Belgium.

4. Enhanced anomalous UV-Vis absorbance from TiO_2 nanostructures fabricated via low energy ion irradiation, **Vanaraj Solanki** , S. Majumder, I. Mishra, S.R. Joshi, D. Kanjilal and Shikha Varma. SHIMEC-2014 Inter University Accelerator Centre (IUAC), New Delhi.

5. Relative Humidity dependent Conduction Process in Mesoporous SnO_2 with An Oscillatory behaviour, **Vanaraj Solanki,** S. B. Krupanidhi, and K. K. Nanda, International Conference on Crystal Ball Vision On Science & Engineering For Societal Upliftment (2017), 7-8th August 2017, CSIR-National Institute of Oceanography, Dona Paula, Goa, India-403004.

6. Oxygen Vacancy Induced Enhanced photo-absorption from ZnO Nanostructures, **Vanaraj Solanki**, S. R. Joshi, I. Mishra, D. Kabiraj, N. C. Mishra, and Shikha Varma, International Conference on Nano Structuring by Ion Beam (ICNIB-2017), 11-13th October 2017, Devi Ahilya University, Indore (India).

Talks Delivered :

1. Preparation and Characterization of ZnO nano Structures. Inter University Accelerator Centre (IUAC), New Delhi, Feb 2011.

2. Fluence Dependent Bandgap Engineering of Rutile TiO_2(110) Single crystal, "International Conference on Nanostructuring by Ion Beams (ICNIB-2013)" 23-25 October 2013, Jaipur, Rajasthan."

3. Modification of Bandgap Parameters after Atom beam Sputtering of ZnO(0001), "International Conference on Physics at Surfaces and Interfaces (PSI-2014) " 24-28 February 2014, Puri , odisha.
4. Investigating magnetic properties in conjugation with channeling studies for Co doped TiO_2(110) single crystal, Inter University Accelerator Centre (IUAC), New Delhi, July 2014.

5. Channeling of atom beam modified ZnO nano patterns, Inter University Accelerator Centre (IUAC), New Delhi, July 2014.

6. Study on Variation in Magnetic & Photo Catalytic Properties of TiO_2 by Cadmium Ion Implantation, Inter University Accelerator Centre (IUAC), New Delhi, July 2014.

7. A chemiresistive sensor thereof for electronic listening with mesoporous SnO_2 as the backbone. "National conference on recent innovations in ccience - 2018" School of Science, RK University, Rajkot during 19th - 20th January, 2018**.**

8. Portable static hydroelectric cell with mesoporous SnO_2 as the backbone. "International Symposium on Eco-materials Processing and Design (ISEPD-2018)" organized by Nagaoka University of Technology, Japan, from 21st to 25th February 2018, at Jaipur, Rajasthan.

Conference/ School/Workshop Attended :

1. SERC School on Nano-Optics from 13th September to 1st October 2010, Hamirpur.

2. Swift Heavy Ion in Materials Engineering and Characterization 2010, 6th to 9th October 2010, IUAC, New Delhi.

3. Current Trends in Condensed Matter Physics 15th to 19th December 2010, NISER, Bhubaneswar.

4. International Conference on Ion-Beam Induced Nano patterning of Materials, 6th to 10th February 2011 Institute of Physics, Bhubaneswar.

5. National workshop on Advanced materials and technology (NWAMT) 22nd to 23rd April 2011, ITER Bhubaneswar.

6. Workshop on Electron Microscopy (WEM), 23rd - 25th November 2011, Institute of Physics, Bhubaneswar.

7. Lectures on Photoemission (LoP) and One Day Workshop on Photoemission Studies of Advanced Materials (PSAM - 2011) 08th - 13th December 2011, Institute of Physics, Bhubaneswar.

8. Workshop on New and Nano Materials (WNNM-12) 20th - 21st January 2012, Institute of Material Science, Bhubaneswar.

9. Awareness workshop on the facilities of UGC-DAE Consortium for Scientific Research 23rd - 24th January 2012, Utkal University Bhubaneswar.

10. International School on Ion Beams in Materials Science October 3-8, 2012. IUAC New Delhi.

11. Swift Heavy Ions in Materials Engineering and Characterization (SHIMEC 2012) October 9-12, 2012. IUAC New Delhi.

12. Advanced School on High Resolution Transmission Electron Microscopy (ASTEM-2013) March 4-8, 2013. IOP Bhubaneswar.

13. International Conference on Nanostructuring by Ion Beams (ICNIB-2013) 23-25 October 2013, Jaipur, Rajasthan India.

14. International Conference on Physics at Surfaces and Interfaces (PSI-2014) 24- 28 February 2014, Puri, India.

15. Accelerator user Committee Meeting (AUC-56), 5th July 2014, Inter University Accelerator Centre, New Delhi.

16. International Conference on Ion Beam Modification of Materials (IBMM-2014), 14-19 September 2014, Leuven, Belgium.

17. Swift Heavy Ions in Materials Engineering and Characterization (SHIMEC 2014) 14-17 October, 2014. IUAC New Delhi.

18. A cluster of topical meetings on Current Trends in Condensed Matter Physics (CTCMP-2015), 19-22 February 2015, NISER, Bhubaneswar, India.

19. Workshop on the Use of Low Energy Ion Beams (WIB-2015), 7-9 November 2015, Institute of Physics, Bhubaneswar, India.

20. International Conference on Emerging Materials (CEMAT-2016), 18-19 July 2016, Indian Institute of Science, Bangalore, India.

21. International Conference on Crystal Ball Vision On Science & Engineering For Societal Upliftment, 7-8 August 2017 CSIR-National Institute of Oceanography, Dona Paula, Goa, India-403004.

22. International Conference on Nanostructuring by Ion Beams (ICNIB-2017) 11th -13th October 2017, Devi Ahilya University,Indore(M.P.), India.

23. National Conference on Recent Innovations in Science – 2018 (NCRIS-18)" 19th - 20th January, 2018RK University, Rajkot.

24. International Symposium on Eco-materials Processing and Design (ISEPD-2018)" organized by Nagaoka University of Technology, Japan, from 21st to 25th February 2018, at Jaipur, Rajasthan.

25. Indus Synchrotron User Meeting 2019, Indore, India, from 27th to 29th March 2019.