

BIO-DATA

Name: Dr. (Mrs.) Jignasa V. Gohel
Date of Birth: 14-06-1979
Address: Associate Professor
Department of Chemical Engineering
S. V. National Institute of Technology, Surat
Ichchhanath, Surat-395007 (Gujarat) INDIA
Tel. (0261) 2201686, 2201642
Fax No. (0261) 2227334, 2228394

E-mail: sjn@ched.svnit.ac.in,
jignasa.narsinhbhai@gmail.com
Institute webpage: www.svnit.ac.in/
http://www.svnit.ac.in/facup/jns_chem.pdf



Educational Qualifications:

Degree and Specialization	University/Institute	Year of Completion
Ph. D. (Chemical) (Nanotechnology)	S.V. National Institute of Technology, Surat	2012
M.E. Chemical Engineering (Petrochemical Technology)	M. S. University, Vadodara, Gujarat	2002
B.E. Chemical Engineering	Gujarat University, D. D. Institute of Technology, Nadiad, Gujarat	2000

Teaching and Research Experience: U.G. and P.G. Teaching: Over 19 years.

Institute	Current Designation	Period
S. V. National Institute of Technology, Surat, Gujarat	Associate Professor	Since 28/01/2012
S. V. National Institute of Technology, Surat, Gujarat	Assistant Professor	17/07/2007 – 28/01/2012
Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India	Lecturer	11/07/2005 – 17/07/2007
Nirma institute of Technology, Ahmedabad, Gujarat	Lecturer	17/01/2005 – 11/07/2005
V.V.P. Engineering. College, Rajkot, Gujarat	Lecturer	12/08/2002 – 17/01/2005

Research Fields of Interest: Green Energy, Materials Science, Nanotechnology, Solar Cells, Energy Storage

Ph.D. Students Guided: 3 completed, 1 ongoing

M.Tech Dissertations Guided: 8 completed, 1 ongoing

There are two PhD positions available with fellowship of Rs. 31,000/- per month in our research group.

Essential Qualifications: Master Degree in Chemical Engineering or Equivalent. Interested candidates/Students may contact sjn@ched.svnit.ac.in with a brief CV.

Research Projects: 04

Publications: (Total No = 71)

Full Papers Published /Accepted for Publication in SCI/SCIE Journals: 36

Full Papers Published as Chapters in International Books: 4

Full Papers Published in Miscellaneous International Journals: 2

Full Papers Presented & Published in International Conferences Proceedings: 25

Full Papers Presented & Published in National Conferences Proceedings: 4

(for details of published full papers please see **Appendix-I**)

Awards won/Recognition:

- 1. Won National Award for Best Research** and Ph.D. Thesis in 2014 given by IChE (Indian Institute of Chemical Engineers) in Chemical Engineering/Technology for the research work on “Synthesis and applications of nanoparticles”
- 2. Early Career Research Award** was sanctioned by SERB, Government of India, New Delhi, for Research work on Synthesis and characterization of semiconductor/oxide materials for cost effective perovskite solar cell modules in July, 2017.
- 3. Best Paper Awarded at** International conference on “Nanotechnology Applications: Chemical, Energy and Environment” **2017**, Paper Title: TiO₂ nanoparticles prepared by mechanical reduction technique for superior DMFC nanocomposite PVA membranes”

Citations Records: Citations: 1171 (Source: Google Scholar Citations: as on 02-June, 2023
h-index (Hirsch index): **17**, ***i10- index***: **27**

Process Patents: 04

- (1) Title: “Perovskite Solar Cell with Poly(3-hexylthiophene) based Gradient Heterojunction Layer and Method of its Fabrication”, **granted on 21/03/2022 with Patent no.392369**
- (2) Title: “Process for synthesis of copper zinc tin sulfide CZTS material as hole transport material” **granted on 20/05/2022 with Patent no.397301.**
- (3) Title: “Mixed Cationic Perovskite Solar Cell with UiO66 as Passivating Material and method of its Fabrication”, Patent published, Application No. **202321023299**
- (4) Title: “Hybrid Solar Cell with enhanced efficiency and stability and Method of its Fabrication”, Patent under Process

Reviewers: Reviewed/reviewing technical papers for 20 International/National Journals (which includes 15 SCI/SCIE Journals) in the fields of Chemical Engineering, Energy, and thin films, and solar cells

Ph.D. Thesis Examiner: Till date Examined 04 Ph.D. thesis of CSIR/Universities. Ph.D. thesis examined for CSIR (NCL, Pune); Gujarat Technological University (GTU), Examined 01 Ph.D. thesis of SRM University (SRM Institute of Science and Technology), as Ph.D. thesis examined in May 2023.

Expert Lectures delivered: 24

Workshops/Summer Schools/WINTER Schools/Short term Courses /Training Programme organized: 6
Workshops/Summer Schools/WINTER Schools/Short term Courses attended: 23 (*Appendix-III*)

Research Projects: 04 completed

- (1) DST-SERB, (Rs. 16,32,000/-) from Government of India, New Delhi, for “Synthesis and characterization of semiconductor/oxide materials for cost effective perovskite solar cell modules” for 3 years (2017-2020).
- (2) Institute Research Grant (Assistant Professors (Rs. 9.80 Lakhs) From S. V. National Institute of Technology, Surat for Nano structured photoelectrode synthesis, characterization and applications in solar energy conversion for 2 years (2014-2016).
- (3) TEQIP project grant of the Institute for UG student “Synthesis, characterization and optimization of Nanostructured photoelectrochemical material for water splitting” Rs. 50,000/-(2013-2014).
- (4) Research project grant of the Institute (TEQIP sponsored) for UG student for “Flow meter using linear variable differential transformer (LVDT)” Rs. 50,000/- (2013-2014).

Ph.D. Students Guided

Sr. No.	Student Name (Adm. No.)	Title of Thesis	Ph. D. Awarded in Year	Co-Supervisor (if any)
1.	Nitukumari Zha (DS14CH007)	Preparation and optimization of perovskite thin film solar cell	Ph. D. Awarded in January, 2019	Dr. Sanjay R. Patel
2.	Siddhdhant Patel (DS15CH001)	New generation photovoltaic solar cells with high efficiency and low cost	Ph. D. Awarded in March, 2020	---
3.	SaiKumar Nair (DS17CH001)	Investigation on stability, efficiency and degradation studies of perovskite solar cells	Ph. D. Awarded in February, 2022	---
4.	Yagnesh Trivedi (DS18CH001)	Ab initio study of photoelectrochemical applications	Ongoing	---

M.Tech Dissertations Guided

Sr. No.	Student Name (Adm. No.)	Title of Thesis	Academic year of Dissertation	Co-Supervisor (if any)
1.	Preeti Mishra (P11CH030)	A study on synthesis of nanoparticles, proton exchange membranes and membrane electrode assembly for direct methanol fuel cell.	2012- 2013	Dr. Z.V.P. Murthy
2.	Mangesh Lanjewar (P12CH014)	A study on nanostructured thin film preparation and its application in sensitized solar cells	2013-2014	-----
3.	Mohit Singh (P12CH005)	A study on efficient nanostructured photo anode synthesis and its optimization for applications in photoelectrochemical cells for solar energy capturing	2013-2014	Dr. A.K. Jana
4.	Yashad Joshi (P13CH002)	A study on advanced nanostructured thin film solar cells: Synthesis, characterization and applications	2014-2015	----
5.	Avinash Jadhav (P14CH002)	Thin film preparation and its applications for solar cell applications	2015-2016	----
6.	Gaurang D. Vaghela (P17CH013)	A study on synthesis and optimization of SnO ₂ thin films for applications in perovskite solar cells	2018-2019	----
7.	Siba Prakash Bhoi (P18CH004)	Study on synthesis, characterization and applications of hybrid thin film solar cell	2019-2020	---
8	Subham Khare (P20CH003)	A Study on perovskite solar cell additive engineering and surface passivation	2021-2022	Dr. S. K. Sundar
9	Srish Kulkarni (P21CH005)	Contemporary Energy Materials for Efficient Energy Conversion	2022-2023	Dr. Smita Gupta

International Recognition:

1. Chaired a Technical Session on Thermodynamics and Energy Technology at International Conference, FOOTPRINTS-2007 held at Faculty of Technology, M. S. University, Baroda, India, 18 February, 2007.
2. Chaired a Technical Session at paper presentation competition at AUTOFEST '09, national level auto-tech festival, organized by Society of Automotive Engineers (SAE) at SVNIT from 31 October-2 November, 2009.

Memberships in professional bodies: Life Member of IICChE, Indian Institute of Chemical Engineers, LM-53987

Testing/Consultancy: Testing of nanoparticles size, analysis of various compounds and solutions, such as, paint, Lipoid, dye and pharmaceutical compounds for and chemical structure. of various companies/Individual

Contribution/Nomination as External Examiner/Expert:

1. Contribution in Ph.D. Thesis and synopsis Evaluation for GTU on 1/4/2019
2. Invitation as an expert for the Research Week on 21st (Sat) and 23rd (Mon) Dec. 2019 at GTU, Chandkheda

Summer research Project Guided (B.Tech) (completed): Total No. 02

- (1) Summer Research project grant of the Institute (Rs. 10,000/-) for UG student, (Deepti Banduke, U16CH011) "Preparation of SnO₂ thin film using sol-gel spin coating technique and study the effect of molar concentration, aging time and annealing temperature parameters on efficiency of solar cell" May-July (2018)
- (2) Summer Research Grant project grant of the Institute (Rs. 10,000/-) for UG student, (Hrdik Chandra, U15CH032) "Effect of type of annealing environment and temperature on the efficiency of CZTS thin film solar cell" May-July (2017)

Expert Lectures delivered: Total No. 24 (Appendix –II)**Number of Summer/Winter Schools/ Training Programmes Organized**

1. Organized as a Coordinator, the Intellectual Property Awareness program in collaboration with Government of India, Intellectual Property Office, India, 2022 at S.V. National Institute of Technology, Surat, Gujarat, India, on 21 January, **2022** (Coordinators: Dr. Jignasa V. Gohel), Number of Registered Participant/Beneficiary: 145
2. Organized as a Coordinator, TEQIP-III Sponsored One-Week Short-Term Training Program on "Research Trends in Energy and Environment", Department of Chemical Engineering, S.V. National Institute of Technology, Surat, Gujarat, India, during 6th -10th January, **2020** (Coordinators: Dr. Jignasa V. Gohel, Dr. Vineet Rathore, Dr. S. Sundar), Number of Registered Participant/Beneficiary: 25
3. Organized as a Coordinator, TEQIP-III Sponsored One-Week Short-Term Training Program on "Research Methodology, Innovation and Academic Administration in Engineering", Department of Chemical Engineering, S.V. National Institute of Technology, Surat, Gujarat, India, during 1st – 5th July, **2019** (Coordinators: Dr. Jignasa V. Gohel, Dr. Chetan M. Patel, Dr. Mausumi Mukhopadhyay)
4. Organized as a Coordinator, TEQIP-III Sponsored One Day Workshop on "Industry Institute Interaction for Higher Education and Entrepreneurship", Department of Chemical Engineering, S.V. National Institute of Technology, Surat, Gujarat, India, on 16th March **2019** (Coordinators: Dr. Jignasa V. Gohel, Dr. M. A. Desai, Dr. Chetan M. Patel, Dr. Mausumi Mukhopadhyay)
5. Organized as a Coordinator a TEQIP-III Sponsored One Day Workshop on Curriculum and Syllabus Revision for B.Tech and M.Tech Programme" (Workshop) at Department of Chemical Engineering, S.V. National Institute of Technology, Surat, Gujarat, India, on 02 January, **2019** (Coordinators: Dr. Jignasa V. Gohel, Dr. Chetan M. Patel, Dr. Meghal A. Desai, Dr. Mausumi Mukhopadhyay)
6. Organized as a Coordinator, TEQIP-II Sponsored One-Week Short-Term Training Program on "Recent Trends in Nanomaterials Synthesis, Characterization and Applications", Department of Chemical Engineering, S.V. National Institute of Technology, Surat, Gujarat, India, during 14th – 18th October 2013 (Coordinators: Dr. Jignasa V. N. Solanki and Dr. Z.V.P. Murthy)
7. Organized a two-day workshop on "MATLAB for Process Engineers" as a Member of organizing committee sponsored by ISTE from 16th to 18th July, 2004 at V.V. P. Engineering College, Rajkot, Gujarat, India.

Various Academic and Administrative Responsibilities/Activities

1. Chief Warden, Mother Teresa Bhavan
2. Faculty Advisor of B. Tech IV year
3. Member of Committee for Institute Fee Structure Revision
4. Member of Institute Canteen Tender Committee
5. Member of Convocation discipline committee
6. Departmental TEQIP-II Coordinator
7. In-charge of B.Tech-II year (Chemical) Class Registration
8. Member of stock-verification committee
9. Member of Institute cultural festival - Sparsh Committee
10. Member of anti-ragging committee
11. Member of Dasvidaniya Discipline and hospitality committee
12. Appointed Member of Departmental committee for Accreditation 2008.

13. Member of Tablet Distribution committee
14. Department Instrumentation and Process Control Lab in charge
15. Member of Scrutiny Committee for student elections at institute level
16. Member of Institute student counseling Committee
17. Member of Discussion Committee of Syllabus revision workshop for UG and PG program.
18. Served as Factotum in the final examination, invigilator in different national level exams
19. Worked as Asst. Presiding Officer in State Assembly Election & Corporation Election.
20. Worked as Asst. Presiding Officer in National Assembly Election & Corporation Election

Diploma/Degree Courses offered to Reliance:

1. Degree course offered to Reliance Potential employees and taught subject IPC, January to March 2020
2. Degree course offered to Reliance Potential employees and taught subject IPC, in 2008

Courses developed under NBA: (Total No. 03)

1. Nanomaterials Synthesis by Chemical Methods
2. Multicomponent Distillation Design
3. Introduction to Nanotechnology

List of Students of MMMUT for Summer Research Internship at SVNIT, Surat (2019)

	Roll NO.	Name of Student	CGPA	Interested Research Topic	MMMUT Mentor
1	2017061015	Ankur singh Yadav	7.53	Solar cell	Dr. V. L. Gole
2	2017061004	Abhishek Prajapati	6.52		Dr. V. L. Gole

Workshops/Short Term Courses/Seminars Attended: See Appendix-III

Appendix-I

Papers Published in International Journals (SCI/SCIE; Science Citation Index Expanded): 36

- 1) Shubham Khare, **Jignasa V. Gohel**, “Performance enhancement of cost-effective mixed cationic perovskite solar cell with MgCl₂ and n-BAI as surface passivating agents”, *Optical Materials*, **132**, 112845 (2022) (Elsevier Scientific Publication, The Netherlands)
(Impact Factor: 3.5/2022)
- 2) Saikumar Nair, **Jignasa V. Gohel**, “Introduction of P3HT-based gradient heterojunction layer to improve optoelectronic performance of low-cost carbon-based perovskite solar cell”, *Optical Materials*, *Volume 119, September*, 111366 (2021) (Elsevier Scientific Publication, The Netherlands)
(Impact Factor: 3.754/2021)
- 3) Saikumar Nair, **Jignasa V. Gohel**, “*Impact of stress testing and passivation strategies on low-cost carbon-based perovskite solar cell under ambient conditions*” *Optical Materials*, **117**, July, 111214 (2021) (Elsevier Scientific Publication, The Netherlands)
(Impact Factor: 3.754/2021)
- 4) Saikumar Nair, **Jignasa V. Gohel**, “A study on optoelectronic performance of perovskite solar cell under different stress testing conditions” *Optical Materials*, Elsevier Publication, 109 (2020) 110377, (2020)
(Impact Factor: 3.06/2020)
- 5) Saikumar Nair, Siddhanth Patel and **Jignasa V. Gohel**, “Recent trends in efficiency-stability improvement in perovskite solar cells”, *Materials Today Energy*, Elsevier Publication, **17** (2020) 100449
(Impact Factor: 7.01/2020)
- 6) Saikumar Nair, Siddhanth Patel and **Jignasa V. Gohel**, “Performance of low-cost mixed cationic carbon-based solar cells prepared through compositional engineering under ambient conditions”, *Journal of Photochemistry and Photobiology A: Chemistry*, Elsevier Publication, **392** (2020) 112437
(Impact Factor: 3.06/2020)
- 7) **Jignasa N. Solanki**, Preeti S. Mishra, Z.V.P. Murthy, TiO₂ nanoparticles prepared by mechanical reduction technique for superior DMFC nanocomposite PVA membranes, *Separation Science and Technology*, **54** (2), (2019) 233-246
(Impact Factor: 1.718/2019)

- 8) Siddhant B. Patel, **Jignasa V. Gohel**, Synthesis of novel counter electrode by combination of mesoporous–macroporous CZTS films for enhanced performance of quantum-dots sensitized solar cells, *Journal of Materials Science: Materials in Electronics*, 29 (21), (2018) 18151-1815
(Impact Factor: 2.195/2018)
- 9) Siddhant B. Patel, Amar H. Patel, **Jignasa V. Gohel**, A novel and cost effective CZTS hole transport material applied in perovskite solar cells, *CrystEngComm*, Royal Society of Chemistry England 20 (47), (2018) 7677-7687
(Impact Factor: 3.304/2017)
- 10) Nitu Kumari, Sanjaykumar R. Patel and **Jignasa V. Gohel**, Enhanced stability and efficiency of Sn containing perovskite solar cell with SnCl₂ and SnI₂ precursors, *Journal of Materials Science: Materials in Electronics*, 29 (21), (2018) 18144-18150 DOI:: 10.1007/s10854-018-9926-y
(Impact Factor: 2.324/2018)
- 11) Nitu Kumari, Sanjaykumar R. Patel and **Jignasa V. Gohel**, Superior efficiency achievement for FAPbI₃-perovskite solar cell by optimization with response surface methodology technique and partial replacement of Pb by Sn, *Optik-International Journal for Light and Electrons optics*, 176 (2019) 262–277.
(Impact Factor: 2.187/2019)
- 12) Siddhant B. Patel, **Jignasa V. Gohel**, Quasi solid-state quantum dot–sensitized solar cells with polysulfide gel polymer electrolyte for superior stability, *Journal of Solid State Electrochemistry* Springer Publications, Germany, 23 (2019) 2657–2666
(Impact Factor: 2.646/2019)
- 13) **Jignasa N. Solanki**, Preeti S. Mishra and ZV.P. Murthy, TiO₂ nanoparticles prepared by mechanical reduction technique for superior DMFC nanocomposite PVA membranes, *Separation Science and Technology*, 54 (2), 2018, 233-246
(Impact Factor: 1.718/2018)
- 14) Siddhant B. Patel, **Jignasa V. Gohel**, Optimization of sol–gel spin-coated Cu₂ZnSnS₄ (CZTS) thin-film control parameters by RSM method to enhance the solar cell performance, *Journal of Materials Science*, (53), 2018, 12203–12213
(Impact Factor: 3.442/2018)
- 15) Mangesh Lanjewar, **Jignasa V. Gohel**, Highly enhanced solar conversion efficiency of novel layer-by-layer PbS:Hg and CdS quantum dots sensitized ZnO thin films prepared by sol-gel spin coating, *Bulletin of Materials Science* 41 (6), 2018, 151

(Impact Factor: 0.899/2013)

- 16) Nitu Kumari, S. R. Patel and **Jignasa V. Gohel**, Optical and structural properties of ZnO thin films prepared by spray pyrolysis for enhanced efficiency perovskite solar cell application", *Optical and Quantum Electronics*, 50 (2018) 180-201 Springer Publications, DOI: 10.1007/s11082-018-1376-5, 50 (4), 180

(Impact Factor: 1.055/2017)

- 17) Siddhant B. Patel, **Jignasa V. Gohel**, Enhanced solar cell performance by optimization of spray coated CZTS thin film using Taguchi and response surface method, *Journal of Materials Science: Materials in Electronics*, 29 (7), 2018, 5613-5623, DOI: <https://doi.org/10.1007/s10854-018-8530-5>

(Impact Factor: 2.019/2016)

- 18) Nitu Kumari, **Jignasa V. Gohel**, SR Patel, Optimization of TiO₂/ZnO bilayer electron transport layer to enhance efficiency of perovskite solar cell, *Materials Science in Semiconductor Processing*, Vol. 75 (2018) 149–156. (Elsevier Scientific Publication, The Netherlands)

(Impact Factor: 2.359/2018)

- 19) Nitu Kumari, S. R. Patel and **Jignasa V. Gohel**, Current Progress and Future Prospective of Perovskite Solar Cells: A Comprehensive Review, 53 (2018) 161-186, *Reviews on Advanced Materials Science*,

(Impact Factor: 2.50/2018)

- 20) **Jignasa V. Gohel**, A. K. Jana, Mohit Singh, Highly enhanced photocurrent of novel quantum-dot-co-sensitized PbS–Hg/CdS/Cu: ZnO thin films for photoelectrochemical applications, *Applied Physics A* (2017) 123 (8) 506

(Impact Factor: 1.455/2015)

- 21) Nitu Kumari, **Jignasa V. Gohel**, SR Patel, Multi-response optimization of ZnO thin films using Grey-Taguchi technique and development of a model using ANN *Optik-International Journal for Light and Electron Optics* (2017) 144, 422-435

(Impact Factor: 0.835/2017)

- 22) **Jignasa N. Solanki**, Preeti S. Mishra and ZV.P. Murthy, Enhanced performance of DMFC prepared by 10Cu/CeO₂ catalyst and nanocomposite SPVA membranes with layer-by-layer coating of polyacrylic acid and chitosan, *International Journal of Hydrogen Energy* (2017), <http://dx.doi.org/10.1016/j.ijhydene.2017.04.008>

(Impact Factor: 3.205/2015)

- 23) Mangesh Lanjewar, **Jignasa V. Gohel**, Enhanced Performance of Ag Doped ZnO and Pure ZnO Thin Films DSSCS Prepared by Sol Gel Spin Coating, *Inorganic and Nano-Metal Chemistry*, Volume 47, 2017 - Issue 7 Pages 1090-1096, DOI: 10.1080/24701556.2016.1241275, 2016 (Taylor & Francis Publication, USA)

(Impact Factor: 0.493/2015)

- 24) **Jignasa N. Solanki**, Preeti S. Mishra and ZV.P. Murthy, In Situ Prepared TiO₂ Nanoparticles Crosslinked Sulfonated PVA Membranes with High Proton Conductivity for DMFC, *Química Nova*, Vol.39(No.6) (2016) 704-711. DOI: 10.5935/0100-4042.20160076 (Sociedade Brasileira de Química, Brazil)

(Impact Factor: 0.76/2015)

- 25) Vaibhav N. Mehta, **Jignasa N. Solanki**, Suresh Kumar Kailasa, Selective visual detection of Pb(II) ion via gold nanoparticles coated with a dithiocarbamate-modified 4'-aminobenzo-18-crown-6, *Microchim Acta* (Springer), Microchim Acta (2014) 181: 1905-1915.

(Impact Factor: 3.90/2014)

- 26) Jignesh V. Rohit, **Jignasa N. Solanki**, Suresh Kumar Kailasa, Surface modification of silver nanoparticles with dopamine dithiocarbamate for selective colorimetric sensing of mancozeb in environmental samples, *Sensors and Actuators B: Chemical*, Vol. 200 (No.01) (2014) 219–226. (Elsevier Scientific Publication, The Netherlands)

(Impact Factor: 4.52/2014)

- 27) Shilpa Bothra, **Jignasa N. Solanki**, Suban K. Sahoo, John F. Callan, Anion-driven selective colorimetric detection of Hg²⁺ and Fe³⁺ using functionalized silver nanoparticles, *RSC Advances*, 2014, 4, 1341-1346

(Impact Factor: 4.209/2014)

- 28) Siddhant B. Patel, **Jignasa V. Gohel**, Effect of Type of Solvent on the Sol-Gel Spin Coated CZTS Thin Films, Physics & Astronomy International Journal 1 (4), 1-5, 2017 DOI: 10.1039/c8ce01337c

(Impact Factor: 2.562/2017)

- 29) Preeti S. Mishra, **Jignasa N. Solanki**, Z.V.P. Murthy, TiO₂ Nanoparticles Synthesis for Application in Proton Exchange Membranes, *Química Nova*, Vol.48(No.11) (2013) 969–976. DOI:10.1002/crat.201300179(Wiley-Blackwell, USA)

(Impact Factor: 1.120/2012)

- 30) Shilpa Bothra, **Jignasa N. Solanki**, Suban K. Sahoo, Functionalized Silver Nanoparticles as Chemosensor for pH, Hg²⁺ and Fe³⁺ in Aqueous Medium" *Sensors and Actuators B: Chemical*, Vol.188 (No.11) (2013) 937-943. (Elsevier Scientific Publication, The Netherlands)

(Impact Factor: 3.535/2013)

- 31) **Jignasa N. Solanki**, Z. V. P. Murthy, Reduction of 4-chlorophenol by Mg and Mg-Ag bimetallic nanocatalysts, *Industrial & Engineering Chemistry Research*, Vol.50(No.24) (2011) 14211-14216. (American Chemical Society, USA)

(Impact Factor: 2.071/2013)

32) **Jignasa N. Solanki** and Z.V.P. Murthy, Controlled size silver nanoparticles synthesis with water-in-oil microemulsion method: A topical review, *Industrial and Engineering Chemistry Research*, Vol. 50(No.22) (2011) 12311–12323. (American Chemical Society, USA)

(Impact Factor: 2.071/2010)

33) **Jignasa N. Solanki** and Z.V.P. Murthy, Reduction of Nitro Aromatic Compounds Over Ag/Al₂O₃ Nano Catalyst Prepared in W/O Microemulsion: Effects of Water-to-Surfactant Mole Ratio and Type of Reducing Agent, *Industrial and Engineering Chemistry Research*, Vol. 50(No.12) (2011) 7338–7344 (American Chemical Society, USA)

(Impact Factor: 2.071/2010)

34) **Jignasa N. Solanki** and Z.V.P. Murthy, Preparation of Silver Nanofluids with High Electrical Conductivity, *Journal of Dispersion Science and Technology* Vol.32(No.5)(2011) 724-730 (Taylor & Francis Publication, USA)

(Impact Factor: 0.628/2010)

35) **Jignasa N. Solanki**, R. Sengupta, and Z. V. P. Murthy, Synthesis of Copper Sulphide and Copper Nanoparticles with Microemulsion Method, *Solid State Sciences*, Vol.12(No.9) (2010)1560-1566. (Elsevier Scientific Publication, The Netherlands)

(Impact Factor: 1.828)

36) **Jignasa N. Solanki** and Z.V.P. Murthy, Highly Monodisperse and Sub-nano Silver Particles Synthesis via Microemulsion Technique, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, Vol. 359(No.1-3) (2010) 31-38 (Elsevier Scientific Publication, The Netherlands)

(Impact Factor: 2.130)

Full Papers Published as Chapters in International Books: 04

1. S.B. Patel, J.V. Gohel, Recent Developments in Cu₂ZnSnS₄ (CZTS) Preparation, Optimization and its Application in Solar Cell Development and Photocatalytic Applications, Chapter 14, in: Rajesh J. Tayade, Vimal Gandhi, (Eds.), Photocatalytic Nanomaterials for Environmental Applications, Materials Research Forum LLC, Millersville, PA, USA, 2018 pp. 370-404 (Published as part of the book series Materials Research Foundations Volume 27)

2. Saikumar Nair and Jignasa V. Gohel, “A review on contemporary hole-transport layers in perovskite solar cells”, Chapter 6, in: Lalita Ledwani, Jitendra S. Sangwai, (Eds.), **Nanotechnology for Energy and Environmental Engineering**, Springer Publication, 2020. pg 145-168, March 2020.

3. Nitu Kumari, Sanjaykumar R. Patel and Jignasa V. Gohel, Optimization of MAPbI₃ film using response surface methodology for enhancement in photovoltaic performance, Chapter 17, in: Lalita Ledwani, Jitendra S. Sangwai, (Eds.), **“Nanotechnology for Energy and Environmental Engineering”**, Springer Publication, 2020. pg 395-412, March 2020.

4. Siddhant B. Patel, Gaurang D. Vaghela, Jignasa V. Gohel, "Superior power conversion efficiency of novel solar cell and Multi-response optimization of spray coated SnO₂ thin films" **ELSEVIER S&T Books on Custom Power Devices for Efficient Distributed Energy System**, 2023.

Patent Granted:

1. Granted a patent on "Perovskite Solar Cell with Poly(3-hexylthiophene) based Gradient Heterojunction Layer and Method of its Fabrication", 202121035762, Patent Application no.: 202121035762
2. Granted a patent on "Process for synthesis of copper zinc tin sulfide CZTS material as hole transport material, Siddhant B. Patel and Jignasa V. Gohel, **granted on 20/05/2022 with Patent no.397301**, Application No.: 201921041402 A, Date of filing of Application :13/10/2019, Publication Date:03/01/2020
3. A patent on "Mixed Cationic Perovskite Solar Cell with UiO66 as Passivating Material and method of its Fabrication", Patent published, Application No. **202321023299**

Papers Published in Miscellaneous International Journals: 02

1. Siddhant B. Patel and Jignasa V. Gohel, "Effect of annealing atmosphere and temperature on the properties of the sol-gel spin coated Cu₂ZnSnS₄ (CZTS) thin films", *International Journal of Research*, 4 (2017) 971-974.
2. Nitu Kumari, Sanjaykumar R. Patel, Jignasa V. Gohel, "Optimization of type and concentration of dopant (Sb and Al) for ZnO thin films prepared by spray pyrolysis technique and their applications in perovskite solar cells", *International Journal of Research*, 4 (2017) 938-941.

Full Papers Presented & Published in International Conferences Proceedings: 25

- 1) **Dr. Jignasa V. Gohel**, Siba Prakash Bhoi, Srish Kulkarni, Robust strategies for sustainable ab initio perovskite photovoltaics and role of engineering aspects, Proceedings of International Symposium & 75th Annual Session of IChE (CHEMCON-2022), Kanpur, December 27-30, 2022.
- 2) Srish P Kulkarni, Shubham Khare, **Dr. Jignasa V Gohel**, Experimental Developments to overcome Recent challenges in the fabrication of commercial, stable and highly efficient perovskite solar cell modules, Online International Conference on H2 AND CO2 (S & T Digital), IISER Pune, 17-19 November, 2022

- 3) Palak Vanja, Yagnesh Trivedi, Shubham Khare, **Jignasa V. Gohel**, Passivation of electron transport layer, perovskite layer and the top electrode layer for the perovskite solar cell: A Contemporary Review, 6th International Congress on Innovative Scientific Approaches, Samsun, Turkey Dec 19-20, 2021
- 4) Saikumar Nair, Siba Prakash Bhoi, Yagnesh Trivedi and **Jignasa V. Gohel**, "Optimization of mixed cationic perovskite solar cell through response surface methodology (RSM)", International Conference on Electrochemistry EIHE-2020, BARC (Bhabha Atomic Research Centre), Mumbai, January 21-25, 2020.
- 5) **Jignasa N. Solanki**, Z. V. P. Murthy, "Use of nanofluids in heat transfer applications", *Proceedings of International Symposium on Advances in Mechanical Engineering (AME-2008)*, Surat, December 15-17, 2008.
- 6) **Jignasa N. Solanki**, "Novel biogas plant design for the rural development", *Proceedings of International Symposium on Renewable Energy Asia and 4th SEE Forum Meeting (REA 2008)*, Indian Institute of Technology, Delhi, December 11-13, 2008.
- 7) **Jignasa N. Solanki**, S. P. Dabke, "Phase Equilibria from Equation of States", *Proceedings of International Symposium & 59th Annual Session of IChE in association with International Partners (CHEMCON-06)*, Bharuch, December 27-30, 2006.
- 8) **Jignasa N. Solanki**, K.G. Jadav, M.H. Joshipura, "Removal of Synthetic Color Dyes from textile effluent using low cost adsorbents", *Proceedings of International Symposium & 59th Annual Session of IChE in association with International Partners (CHEMCON-06)*, Bharuch, December 27-30, 2006.
- 9) **Jignasa N. Solanki**, "Removal of VOCs and Toxics from Airborne Emissions using Biofilter", *Proceedings of International Symposium & 58th Annual Session of IChE in association with International Partners (CHEMCON-2005)*, New Delhi, December 14-17, 2005.
- 10) **Jignasa N. Solanki**, "Alternative Sweeteners- A Rising Demand", *Proceedings of International Symposium & 56th Annual Session of IChE (CHEMCON-2003)*, Bhubneshwar, December 19-22, 2003.
- 11) **Jignasa N. Solanki**, "Simulation of phenol removal using Emulsion Liquid Membrane", *Proceedings of International Symposium & 56th Annual Session of IChE (CHEMCON-2003)*, Bhubneshwar, December 19-22, 2003.
- 12) **Jignasa N. Solanki**, B. Sengupta, "ELM - A Novel Separation Technique", *Proceedings of International Symposium & 56th Annual Session of IChE (CHEMCON-2003)*, Bhubneshwar, December 19-22, 2003.
- 13) **Jignasa N. Solanki**, "Application of Molecular Sieves", *International Conference of Chemical Engineering, COLLISION 2000*, September 24-26, 2000, Nadiad, Gujarat, India.

- 14) **Jignasa Solanki**, Z.V.P. Murthy, Monodisperse and Subnano Silver Nanoparticles Synthesis with Microemulsion Method, *Proceedings of the "Annual International Conference on Materials Science, Metal & Manufacturing" (M3 2011)*, Global Science and Technology Forum (GSTF), Singapore, December 12-13, 2011, pp.102-10106. DOI: 10.5176/2251-1857_M318.
- 15) **Jignasa Solanki**, Z.V.P. Murthy, Nanofluid: A Smart and Environment Friendly Fluid for Heat Transfer Applications Reducing Pollution, *Paper presented at the "4th International Congress of Environmental Research (ICER-2011)"*, held at S.V. National Institute of Technology, Surat, India, December 15-17, 2011. (Paper No.559)
- 16) Mohit Singh, Mangesh Lanjewar, **Jignasa N. Solanki**, Synthesis of antimony doped ZnO and silver doped ZnO for capturing visible radiation range in photoelectrochemical cell applications, *Paper presented at the International Symposium 66th Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2013)*, at Institute of Chemical Technology, Mumbai, 27-30 December, 2013.
- 17) Avinash Jadav, Yashad Joshi, **Jignasa N. Solanki**, Fabrication of thin film solar cell by low cost spray pyrolysis method, 6th National Conference on Recent Advances in Manufacturing (RAM-2016), 12-14 May, 2016
- 18) Nitu kumari, **Jignasa N. Solanki** and Sanjaykumar R. Patel, Zinc oxide thin film preparation, characterization and application in solar cells. *Paper presented at the International conference on Macromolecules: Synthesis, morphology, Processing, Structure, Properties and Applications (ICM 2016)*, at Kottayam, Kerala (India), 13-15 May 2016.
- 19) Nitu Kumari, **Jignasa V. Gohel** and Sanjaykumar R. Patel, Effect of type of precursor on optical, structure and Morphological properties of ZnO thin films, *Presented at SVNIT: Annual summit on research and innovation (SRI-2016)*, 15 October, 2016
- 20) Siddhant Patel and **Jignasa V. Gohel**, Synthesis and characterization of Copper Zinc Tin Sulfide films prepared by spray pyrolysis deposition, Paper presented at International Conference on Sustainable Development for Energy and Environment, (ICSDEE-2017)", held at National Chemical Laboratory, Pune, India, January 16-17, 2017 (Paper No. EN-102) ISBN No. 978-93-24457-19-0
- 21) Siddhant B. Patel and **Jignasa V. Gohel**, "Influence of thin film quality control parameters on the properties of spray coated Tin monosulfide thin films for photovoltaic application" –Dubai (UAE) from Proceedings of the "International Conference on Agricultural, Chemical, Biological and Environmental Science (ACBES 2017)", Dignified Researchers Publication (DiRPUB), Dubai, October 17-19, 2017, pp.181-186.
- 22) Siddhant B. Patel and **Jignasa V. Gohel**, "Effect of annealing atmosphere and temperature on the properties of the sol-gel spin coated Cu₂ZnSnS₄ (CZTS) thin films", Paper presented at the

National conference on Recent Advanced and Future Trends in Chemical Technology, at Nirma University, Ahmedabad (India), 16 September 2017.

- 23) Nitu Kumari, Sanjaykumar R. Patel, Jignasa V. Gohel, “Optimization of type and concentration of dopant (Sb and Al) for ZnO thin films prepared by spray pyrolysis technique and their applications in perovskite solar cells”, Paper presented at the National conference on Recent Advanced and Future Trends in Chemical Technology, at Nirma University, Ahmedabad (India), 16 September 2017.
- 24) Jignasa V. Gohel, Preeti S. Mishra and Z.V.P. Murthy TiO₂ nanoparticles prepared by mechanical reduction technique for superior DMFC nanocomposite PVA membranes, International conference, NACEE-2017, at SVNIT, Surat on 23/03/2017.
- 25) Nitu Kumari, Sanjaykumar R. Patel and Jignasa V. Gohel, Titanium oxide thin film preparation, Characterization and application in dye sensitized solar cells, Symposium on Sustainability of Chemical Industries: Exploring New Avenues for Growth: 2017 organized by GCET, Aanad from 22-23 August 2017.

Papers published/Presented in National Conferences/Proceedings: 04

1. Jignasa Solanki, B. Sengupta, Phenol Removal with Emulsion Liquid membrane. Proceedings of Separation in Process Industries (SPI-2003), Published by Institute of Technology, Banaras Hindu University, Varanasi, 2003, pp. 24-30.
2. Jignasa Solanki, Z.V.P. Murthy, Green Synthesis of Nanomaterials. Presented at “National Conference on Green Chemistry” 6th – 8th February, 2009, Veer Narmad South Gujarat University, Surat, Gujarat. (OP-22)
3. Preeti S. Mishra, Jignasa N. Solanki, and Z.V.P. Murthy, Effects of Nanofillers on Proton Exchange Membranes for Direct Methanol Fuel Cell, presented at the “ChEmference’ 12”, a National Conference on Chemical Engineering, hosted jointly at Institute of Chemical Technology, Mumbai and Indian Institute of Technology Bombay on 10th and 11th December, 2012. (Sr.No.76)
4. Jignasa N. Solanki, Kishan soni, Garvit Garg, Deepak saini, Effect of nanoparticle size on band gap of copper doped zinc oxide, presented at the “MR-13”, a National Symposium for Materials Research Scholars 2013, held at Indian Institute of Technology Bombay on 8-10 May, 2013.

Appendix –II

Expert Lectures delivered: 24

- 1) **“Optimization using Taguchi, Response Surface Methodology and ANN: Helpful tools for biological systems”** Expert lecture at STTP on “Computational Methods for Analyzing, Modeling and Predicting the behavior of exploitative or applicatory biological systems”, 22nd-29th December 2021, V.V.P. Engineering College, Rajkot, Gujarat, India
- 2) **“Nanoscience and Nanotechnology for sustainable development”**, Expert lecture at STTP on Nano-Technology: Material, Synthesis, Characterisation and Application, 6th-10th September 2021, S. N. Patel Institute of Technology and Research Centre, Umrakh, Surat
- 3) **“Novel Nanomaterials, Characterization and uses for Energy Sector”**, Expert lecture at STTP on Nano-Technology: Material, Synthesis, Characterization and Application, 6th-10th September 2021, S. N. Patel Institute of Technology and Research Centre, Umrakh, Surat
- 4) **“Solar cells: Process Intensification for Sustainable Energy Conversion”** Expert lecture at Gharda Institute of Technology, Lavel, Khed, Maharastrara on 5/4/2021.
- 5) **“Novel Materials and their applications for preparation of energy efficient contemporary solar cells”**, on 9 April, 2021 at 5 Day STTP (GTSD-21), ChED, GEC-Bharuch.
- 6) **“Synthesis and characterization of semiconductor/oxide materials for cost effective perovskite solar cell modules”** at Workshop (GMW), at IIT Bhubaneswar, on 27 January 2020.
- 7) **“Hybrid Solar cells- Synthesis and Applications”** at Workshop at Kongu Engineering College, Perundurai, Erode, Tamilnadu, AICTE Sponsored STTP, Phase – III on 9 December, 2020
- 8) **“Synthesis Strategies for Improvising the energy efficiency in solar cells”** at Workshop at Kongu Engineering College, Perundurai, Erode, Tamilnadu, AICTE Sponsored STTP, Phase – II 3 December, 2020
- 9) **“Smart Materials and Hybrid Solar cells”** at Workshop at Kongu Engineering College, Perundurai, Erode, Tamilnadu, AICTE Sponsored STTP, Phase – I (23/11/2020 to 28/11/2020) on 25/11/2020
- 10) **“Nanotechnology and Nanowaste”** on 17th January, 2020 at One-day National Seminar on ‘Nanowaste: Sources, Classification and Management’ sponsored by The Institution of Engineers, India at Uka Tarsadia University (UTU), Chemical Engineering Department, Chhotubhai Gopalbhai Patel Institute of Technology (CGPIT), Bardoli.
- 11) **“Thin film Solar cell: Preparation and applications in sensitized solar cell”** at STTP on “Solar photovoltaic energy: contemporary technologies and recent advances” on 8th October 2016 at Physics Dept., SVNIT, Surat.
- 12) **“Hybrid solar cell”** at STTP on “Solar photovoltaic energy: contemporary technologies and recent advances” on 8th October 2016 at Physics Dept., SVNIT, Surat.

- 13) **“Nanomaterials synthesis and Applications”** at International Conference, Chemcon-14, Chandigarh, Punjab, India, on 28 December, 2014.
- 14) **“Synthesis and characterization of TiO₂ nanoparticles and doped nanoparticles for applications in photocatalytic degradation of toxic compounds”** on 23-6-2014 at one-week Short-Term Training Program on “Recent Advances in Separation processes in Chemical Engineering and Nanotechnology” at V.V.P. Engineering College, Rajkot, India.
- 15) **“Recent Trends in Advanced Nanomaterials Synthesis and Applications in Nanocatalysis and Energy Sector”**, on 4-9-13 at TEQIP-II sponsored STTP on "Advanced Materials, Characterization and Applications in Materials Science and Engineering" organized by Applied Chemistry Department, SVNIT, Surat during 2-6 September, 2013
- 16) **“Recent Advances in Degradation of chemicals using Nanotechnology”** on 23-6-14 at one-week Short-Term Training Program RASPCENT-2014 (Recent Advances in Separation processes in Chemical Engineering and Nanotechnology-2014) at V.V.P. Engineering College, Rajkot, India.
- 17) **“Recent Trends in Chemical Engineering and Nanotechnology”** on 23-6-14 at one-week Short-Term Training Program RASPCENT-2014 (Recent Advances in Separation processes in Chemical Engineering and Nanotechnology-2014) at V.V.P. Engineering College, Rajkot, India.
- 18) **“Nanomaterials: Synthesis, Characterization and Applications”** on 14-10-2013 at TEQIP-II Sponsored Short-Term Training Program on “Recent Trends in Nanomaterials Synthesis, Characterization and Applications”, Department of Chemical Engineering, SVNIT, Surat during 14th – 18th October 2013.
- 19) **“Enhanced Properties at Nanoscale”** on 15-10-13 at TEQIP-II Sponsored Short-Term Training Program on “Recent Trends in Nanomaterials Synthesis, Characterization and Applications”, Department of Chemical Engineering, SVNIT, Surat.
- 20) **“Advance Technology and use of nanotechnology for Tertiary treatment of wastewater of Textile units”** at Workshop Jointly organized by GPCB and EcoSarjan for Effluent Treatment Plant Employees training at Surat, during 1 – 5 October, 2012.
- 21) **“Size, Stability and Chemical Characterization of Nanomaterials”** on 17-10-13 at TEQIP-II Sponsored Short-Term Training Program on “Recent Trends in Nanomaterials Synthesis, Characterization and Applications”, Department of Chemical Engineering, SVNIT, Surat
- 22) **“Nanocatalysis in production and in wastewater treatment”** on 18-10-13 at TEQIP-II Sponsored Short-Term Training Program on “Recent Trends in Nanomaterials Synthesis, Characterization and Applications”, Department of Chemical Engineering, SVNIT, Surat.
- 23) **“Synthesis of Metal and Semiconductor Nanoparticles via Chemical Synthetic Routes”** on 22 January, 2009 at a short term course on Nanotechnology: A Sustainable Alternative to Environment, organized at SVNIT, Surat, India during 19-23 January, 2009.

24) “Nanofluids and its applications” on 21 January, **2010** at a short term course on Nanomaterials organized at SVNIT, Surat, India

Paper reviewed in International Journals

1. NanoEnergy (Elsevier Scientific Publication) (SCIE Journal)
2. Advanced Powder Technology (Elsevier Scientific Publication) (SCIE Journal)
2. Surface and Coating Technology (Elsevier Scientific Publication) (SCIE Journal)
3. Journal of Physics and Chemistry of Solids (Elsevier Scientific Publication) (SCIE Journal)
4. Advances in Polymer Technology, A Journal from the Polymer Processing Institute and John Wiley & Sons, Inc.
5. Surface Innovations (ICE Publishing)
6. American Journal of Environmental Protection (Science Publishing Group, USA)
7. American Journal of Nanoscience and Nanotechnology (Science Publishing, USA)
8. National Journal of Industrial Engineering

Appendix-III

Workshops/Short Term Courses/Seminars Attended:

Sr. No	Title STTP/Workshop/Conference	Date of programme		Organizing institute, Place
		From	To	
1	Carbon Neutral Energy Sources	9/05/2016	13/05/2016	SVNIT, Surat
2	Design of experiment using the Taguchi method: an Overview	25/04/2015	25/04/2015	SVNIT, Surat
3	FEM Simulations using COMSOL Multiphysics and Neural Network based Modelling using STATISTICA	7/08/2014	7/08/2014	SVNIT, Surat
4	COMSOL multiphysics modeling	6/12/2014	6/12/2014	SVNIT, Surat
5	Mathematical Statistics for Researchers, Engineers and Scientists	2/09/2013	6/09/2013	SVNIT, Surat
6	Advances on Wastewater Treatment and Energy Generation	30/09/2013	4/10/2013	SVNIT, Surat
7	Green Chemistry and Engineering: Towards a Sustainable Future	8/11/2013	22/11/2013	SVNIT, Surat
8	Developing Teachers for Effective Teaching and Research	3/06/2013	7/06/2013	SVNIT, Surat
9	Treatment and disposal of wastewaters	5/10/2009	9/10/2009	SVNIT, Surat
10	Nanotechnology and Applications	13/07/2009	17/07/2009	SVNIT, Surat
11	Nanotechnology: A Sustainable Alternative to Environment	19/01/2009	23/01/2009	SVNIT, Surat
12	CFD analysis in Chemical Engineering	7/07/2008	11/07/2008	IIT, Mumbai
13	Teaching Pedagogy	12/05/2008	15/05/2008	SVNIT, Surat
14	Research methodology	16/05/2008	17/05/2008	SVNIT, Surat
15	Nanostructured Materials: Research and Development Status	18/02/2008	22/02/2008	IIT, Roorkee
16	Induction training course for teachers	21/01/2008	23/01/2008	SVNIT, Surat
17	Recent Trends in Corrosion Science, Technology, Monitoring and Control	25/12/2007	29/12/2007	SVNIT, Surat
18	Nanoscience and Nanotechnology	16/04/2007	20/04/2007	NITTR, Chandigarh
19	Matlab and its uses in Control	20/02/2006	25/02/2006	DDIT, Nadiad
20	50 years of DNA Double Helix Retrospect and Prospects	11/10/2004	11/10/2004	M.V. College, Rajkot, Gujarat
21	Recent trends in Chemical Engineering	11/07/2016	15/07/2016	SVNIT, Surat.
22	Particle Technology: Characterization and Modelling of Particulate Materials	01/08/2016	05/08/2016	SVNIT, Surat.
23	Green Concepts in Engineering and Chemistry	12/12/2016	16/12/2016	SVNIT, Surat.
24	Process Intensification in Chemical Industries	06/02/2017	10/02/2017	SVNIT, Surat.