

Sandip Hasuram Gharat

Professor

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Research Interests

My research interests focus on Flow and Segregation of Granular Materials which includes :

- Flow and Segregation of binary mixtures during heap formation in quasi-2D system.
- Dynamics of segregation (size, shape, density etc.,) during heap formation by intermittent feeding
- Study of dynamics of coke collapse in Blast Furnace using high speed video photography
- Simulation of granular materials using Discrete Element Method (DEM) & Computational Fluid Dynamics (CFD)

Education

Indian Institute of Technology Bombay, Powai, Mumbai- INDIA

Ph.D., Chemical Engineering: CGPA 7.33/10

- Thesis Topic: *Flow and Segregation of Granular Mixtures in a Simplified Model of Burden Distribution in a Blast Furnace* (Project sponsored by TATA Steel, Jamshedpur- INDIA)
- Advisor: Prof. Devang V. Khakhar, Director - IIT Bombay

Dr. B. A. Tech. University, Lonere, Raigad- INDIA

M.Tech., Chemical Engineering, Dec-2002

Result: 77.23 % (First Class with Distinction)

- Topic: *Fluidization of Fine Particles using Centrifugal Fluidized Bed*
- Advisors: Prof. P. V. Vijay Babu Dr.D. B. A. T. University, Lonere, Raigad
Dr. D. Sathiyamoorthy BARC, Trombay, Mumbai-INDIA

B.Tech., Chemical Engineering, July- 1999

Result: 69.66 % (First Class with Distinction)

- *Topic: Modelling and Simulation of Plug Flow Reactor*
Advisor: Prof. Shrikant J. Wagh Principal, SRICT, Gujrat, INDIA

H.S.C. 1995, Mumbai Board

- *Results: 72 % (First Class)*
Marks: Maths: 92/100, Physics: 88/100, Chemistry: 77/100

S.S.C. 1993, Mumbai Board

- *Results: 86.71 % (First Class with Distinction)*
Marks: Mathematics: 143/150, Science: 137/150

**Teaching &
Research
Experience:17
yrs**

- Professor, Gharda Institute of Technology Lavel, Khed - Ratnagiri *Since April 2020*
- Professor, Department of Chemical Technology, Shroff S. R. Institute of Chemical Technology Ankleshwar Gujarat India *May 2019-March 2020*
- Associate Professor and Head of the Department - Gharda Institute of Technology Lavel, Khed - Ratnagiri *July 2015-April 2019*
- Associate Professor and I/C Principal - Gharda Institute of Technology Lavel, Khed - Ratnagiri *January 2016- July 2016*
- Assistant Professor (Sr. Scale) - University of Petroleum and Energy Studies, Dehradun - INDIA *June 2014 - June 2015*
- Research scholar (Teaching Assistantship through Project), project sponsored by Tata steel Jamshedpur - Indian Institute of Technology Bombay - INDIA *Jan 2010 to June 2014*
- Sr. Lecturer - Vishwakarma Institute of Technology, Pune - INDIA *July 2009 to Dec. 2009*
- Lecturer - Vishwakarma Institute of Technology, Pune - INDIA *Aug 2004 to June 2009*
- Lecturer (Adhoc) - Dr. B. A. Tech. University, Lonere Raigad, INDIA *June 2003 to May 2004*
- Lecturer (Adhoc) - Dr. B. A. Tech. University, Lonere Raigad, INDIA *January 2003 to May 2003*
- Lecturer (Adhoc) - Dr. B. A. Tech. University, Lonere Raigad, INDIA *January 2000 to April 2000*
- Lecturer (Visiting) - Government Polytechnic PEN Raigad, INDIA *June 2000 to Dec. 2000*
- GATE Classes conducted at VIT, Pune during the year 2004 to 2007 under Center of Engineering Excellence (*Departmental Activity, Coordinator : Prof. M. R. Joshi*)

Subject Taught UG -

- **Second Year:** Process Calculations, Fluid Mechanics, Mechanical Equipment Design, Solid Fluid Mechanical Operations, Chemical Engineering Thermodynamics
- **Third Year:** Mass Transfer Operations, Chemical Reactions Engineering
- **Final Year:** Project Engineering & Entrepreneurship Management, Process Equipment Design.
- **Electives:** Computational Fluid Dynamics, Corrosion Engineering

PG -

- **Second Year:** Advanced Transport Phenomena

Laboratory Responsibilities

- Fluid Mechanics, Solid fluid operation, and Mass Transfer-I

Visiting faculty for PG

- Visiting faculty (M. Tech. Chemical Engineering) at Dr. B. A. Tech. University, Lonere Raigad, INDIA for the academic year 2017-18.
- Subject taught: Advanced Reaction Engineering & Reactive Separations

Consultancy & Projects

- Worked on Oil recovery Project Sponsored by Shivalik Waste Management Ltd Ankleshwar (September 2019 to March 2020)
- Worked on Refused Derived Fuel to syngas Project sponsored by BEIL Ankleshwar (August 2019 to March 2020)
- Received grant of Rs 0.35 lakh for project entitled, segregation during heap formation from Mumbai University under Minor Research Project (Jan 2019 to April 2019)
- Done consultancy project with Dr. Shirish H. Sonawane, Associate Professor, Chemical Engg. Department NIT, Warangal, on Design and Development of Chemical Engineering Laboratory Equipments S. P. Engineers, PUNE, INDIA and also done demonstration and setting of these equipments on site in Adis Ababa, Ethiopia. *Duration: August 2007 to December 2008*
- Received grant of Rs 1 lakh for project entitled Synthesis of Nanoparticles from University of Pune in the year 2008-2009.
- Working as a Senior Scientific Consultant in Gharda Scientific Research Foundation since August 2016.
- Working as a Consultant in Gharda Chemical Ltd. Lote since December 2015.

- Working on a joint project (GCL-GIT): Stability of Fluidized Bed
- Working on Project entitled Stability Constant of Metal ions, along with Dr. P. N. Patil (Associate Professor, Chemical Department and In-charge GSRF Level site), Name of the Company: Excel Industries Lote. *Status: ongoing*

**Member
advisory
committees**

- Advisory committee member for National Conference on “Changing Technology and Rural Development,” organized by Rajendra Mane Engineering College Ambav, Devrukh from 16-17 December 2016.

**Courses
organized
(STTP/FDP)**

- Organizing committee member for SCHEMCON 2019, Department of Chemical Engineering, SRICT Ankleshwar, 17-18 Oct 2019
- Co-ordinator for Paper and poster session for SCHEMCON 2019 - abstract review process, sorting of papers, sending acknowledgment, review of papers from department sr. faculty as well outside SRICT, sending acceptance letters
- Coordinator for adhoc/probationary faculty and supporting staff, SRICT Ankleshwar for the academic year 2019-20
- Co-ordinator - Three days workshop on “Computational Fluid Dynamics (Theory & Practical)” organized by Department of Chemical Engineering, GIT Level 3-5th January 2019
- Convener - “National Science Day” organized in association with ICT Mumbai in GIT Level, 28th February 2018
- Convener - Five days STTP on Ansys Fluent (CFD) Software Training organized by Department of Chemical Engineering at Gharda Institute of Technology Level during 9-13 November 2016
- Joint organizing secretary for symposium on “Recent Advances in Polymer Technology”, organized by GSRF & hosted by Chemical Engineering Department, GIT Level, 20th August 2016

**Workshop and
Seminar
Attended**

- One day workshop on “FLOW, Hotel Quality Resort, Organized by IChE Lote Regional Centre, 7th October 2017
- Three days workshop on “Process Safety” organized by Reliance Industries Nagothane, 5-7 Sept 2017
- One week STTP program at IIT Bombay on CFD-Development, Applications & Analysis, 29th May 2017 to 2nd June 2017.

- Five days STTP on Ansys Fluent (CFD) Software Training organized by Department of Chemical Engineering at Gharda Institute of Technology Level during 9-13 November 2016.
- One day workshop attended on Tips to improve Process Plant, IChE Student Chapter Lote, 24 October 2015.
- Workshop on “Process Intensification”, at ICT Mumbai, 8-9th September 2016
- 3 days workshop on “Energy crisis & role of energy management and renewables” organized by Mechanical, Civil & Chemical department at GIT Level, 9-11 July 2015.
- 3 days training programme on “Pedagogical training in Engineering Education during 16-18 March 2009 organized by RIT Rajaramnagar, Sangali in Collaboration with DTE (Maharashtra State) under TEQIP.
- RENET Renewable Energy Workshop, 21-22 July 2006, IIT Mumbai, India
- Two days seminar on “Leadership Skills and Emotional Intelligence, at Pune, DISHA Management, 14-15 December 2006.
- One Day Seminar on “Batch to Batch Optimization, UDCT-VIT Pune, 22nd October 2005.
- One week training programme done at VIT, Pune campus on “Facilitation Skills Training Programme for Lectures from 19th Dec. to 24th Dec.2005.
- Two weeks “Induction Training Programme (ITP) for Engg. College Teachers under TEQIP Conducted by NITTR Bhopal, Extension centre, Pune from 5th to 17th2005.
- Two days workshop attended on “Writing a Ph.D. Thesis, GREAT Foundation Pune, 11-12 September 2004.

Industrial

- Training/Intership**
- 30 days internship at Indian Institute of Technology Bombay on “Underground Coal Gasification” Project (sponsored by ONGC) under the guidance of (*Prof. Sanjay Mahajani & Dr. Sateesh Daggupati (former PhD student IIT Bombay)*), May 2009.
 - 45 days of industrial training done at Gharda Chemicals Ltd. Dombivali, Design Department from 2nd May to 21st June 2005. (*Reference : Prof. A. J. Apte, former HOD, VIT Pune*)

Computer Skills

- Programming Languages : C, C++ and Fortran
- Simulation Technique and Packages : Ansys Fluent (CFD), DEM, MATLAB
- Operating Systems: Windows, Linux
- Document Preparation: Microsoft Office, Latex

Awards and Honors

- Grant of 1150 Euro (90,000 INR approx.) received from University of Twente, Netherlands dated 27 th June 2019 for International conference on Discrete Elements Methods (DEM 8)
- Received “Bharat Vidya Ratan Award” by Indian Solidarity Council Delhi for Outstanding contribution in the field of education (28th August 2018)
- Received “Educational Award” (Rural cateegory) by Pen Press Club, Pen-Raigad, Maharashtra (2017)
- PhD Scholarship at IIT Bombay: Teaching Assistantship through Project (TAP)- 2010
- Best Teacher in the Department, Chemical Engineering, Vishwakarma Institute of Technology Pune 2005. (Based on feedback received from the students)
- Best Outgoing Student: New English School Johe-Raigad, S. S. C. (1993)

Professional Activities

- Life Time Member of Indian Society for Technical Education (ISTE)

Examination

- External examiners for B. Tech and M. Tech Project: Dr. B. A. Tech. University Lonere, Pune University & Kolhapur University
- Paper Setter/Chairman: Mumbai University & Dr. B. A. Tech. University Lonere.

Journals and Conference Proceedings

- Sandip H. Gharat, Samik Nag, and D. V. Khakhar, “Segregation of binary granular mixtures during heap formation by intermittent feeding” (To be submitted to *Physical Review E*).
- Sandip H. Gharat Dynamics of granular segregation in quasi 2D system 8 th International Conference on Granular Media, *Powders and Grains 2017*, EPJ web of conferences 140, 03039

- Sandip H. Gharat Granular Segregation in a Quasi 2D System during Heap Formation Powder, Granule, Bulk Solids Innovations Applications (PGBSIA conference) JAIPUR, India, 1-3 December 2016.
- Sandip H. Gharat and D. V. Khakhar, Segregation of Granular Materials during heap formation, Rheology of Complex Fluids, IISER-NCL Campus Pune, 2-4 January 2016.
- Sandip H. Gharat and D. V. Khakhar, “Granular segregation in quasi 2d rectangular bin”, *Powders and Grains 2013*, AIP Conf. Proc. 1542, 755-758 (2013); **DOI: 10.1063/1.4812041**.
- Sandip H. Gharat, and D. V. Khakhar, “Dynamics of Granular Segregation in quasi 2D Rectangular Bin”, *7th World Congress on Particle Technology-2014*, Beijing, China, 19-22nd May-2014.
- Sandip H. Gharat, and D. V. Khakhar, “Experimental Investigation of Coke Collapse in quasi-two dimensional system for a Blast Furnace”, *Procedia Engineering* 102, 676-683, (2015).
- Sandip H. Gharat, Apoorva M. Sampat and D. V. Khakhar, “Study of Coke Collapse in quasi 2D system for a Blast Furnace”, *CHEMCON-2013*, 27-30th December 2013, ICT, Matunga, Mumbai.
- Shirish H. Sonawane, S. H. Gharat, Jayprakash Dixit, Kishor Patil and V.S. Mane, Biodiesel Synthesis from Karanja Oil Using Transesterification Reaction *Asian Journal of Chemistry* Vol. 20, No. 2 (2008), 857862

Book chapter

- Book full chapter entitled, “Flow and segregation of granular materials during heap formation” has been published in the book under title, *Progress in Fine Particle Plasmas*, Published on December 16th 2019 (DOI: 10.5772/intechopen.89650)

Papers in Preparation

- Sandip H. Gharat and D. V. Khakhar, “Experimental investigation of dynamics of crater formation in particle stream impact on a granular bed”.
- Sandip H. Gharat and D. V. Khakahr, “Dynamics of granular segregation during heap formation in quasi two-dimensional system”.

Symposium/Poster presentations

- Pranal P. Ambre, Shritej J. Chile and Sandip H. Gharat, “Effect of Height of Fall on Coke Collapse in a Blast Furnance”, *SCHMCON 2018*, Department of chemical engineering, ICT Mumbai, 26-27th October 2018
- Sandip H. Gharat and D. V. Khakhar, “Study of coke collapse in 2D System for a blast furnace”, *Research Scholars Symposium*, Department of Chemical Engg., IIT Bombay, 15th February 2014.

- Sandip H. Gharat and D. V. Khakhar, “Segregation of Granular Mixtures during Heap Formation”, *Research Scholars Symposium*, Dept. of Chemical Engg., IIT Bombay, 17th March 2012.
- Sandip H. Gharat and D. V. Khakhar, “Segregation of Granular Mixtures during Heap Formation”, *SERC School and 6th National Symposium on Rheology of Complex Fluids*, IIT Guwahati, 3-7th January 2012.

**Guest
Lecture/invited
talk**

- Expert lecture on Modeling of pigment dispersion using discrete element method (DEM) in a refresher course on recent trends in dyes and pigment technology organized by Department of Chemical Technology, SRICT Ankleshwar (11 th October 2019)
- Sandip H. Gharat, “Computational fluid dynamics: Preprocessing & Postprocessing”, ISTE-AICTE sponsored program at Rajaram Mane College of Engineering & Technology, Ambav- Devrukh, Maharashtra, 26th June 2018
- Sandip H. Gharat, “Simulation of Granular Materials using Discrete Element Method ”, ISTE-AICTE sponsored program at Rajaram Mane College of Engineering & Technology, Ambav- Devrukh, Maharashtra, 27th June 2018
- Sandip H. Gharat, “Granular Materials: Its Applications & Challenges in the field”, at Vishwakarma Institute of Technology Bibwewadi, Pune, 6th March 2018
- Sandip H. Gharat, “Granular Materials - Process Intensification”, ISTE-AICTE sponsored program at Pravra Rural Engineering College Loni, 2nd December 2017
- Sandip H. Gharat, “Energy Management in Blast Furnace”, Gharda Chemical Ltd. Lote, Energy Conservation Week, 16th December 2016.
- Sandip H. Gharat, “Granular Materials: Its Applications & Challenges in the field”, at Padmbhushan Vasantdada Patil College of Engineering, Budhgaon Sangali, 8th December 2016
- Sandip H. Gharat, “Flow & segregation of granular materials in quasi 2D system”, Powder, Bulk and Solids, India 2016 Conference and Exhibition at Bombay Convention centre, Goregaon, Mumbai, 13-15th October 2016
- Sandip H. Gharat, “Granular Materials: Its Applications & Challenges in the field”, at Sinhgad Institute of Technology Vadgaon-Budruk, Pune, 26th September 2016
- Sandip H. Gharat and D. V. Khakhar, “*Granular Materials: Its Applications and Challenges in the Field*”, Maharashtra Institute of Technology, Alandi, Pune, 26th July 2013.

References

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I hereby declared that the information is correct upto the best of my knowledge.

Date: July 13, 2020

Place: GIT Level, Maharashtra

(Dr. Sandip Hasuram Gharat)