Vivek Ganvir

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PROFESSIONAL PROFILE:

- **Qualification**: PhD (2009) in Chemical Engineering from IIT Bombay, Masters (1998) Chemical Engineering from IISc. Bangalore, B.Tech (1996) LIT Nagpur
- **Experience**: 20+ years in research and development, innovation, product development, modeling & simulation, experimental work.
- **Expertise:** Polymer flow simulations, Rheology of polymer & suspensions, Process engineering and controls, Surface & colloids science and Nanotechnology, Green belt six sigma, stage gate project management.
- **Areas of research:** Polymer processing: extrusion, fibre spinning, film casting, medical devices, Product development, Coatings, dispersions, surfactants, formulation, Water and waste water treatment and Advance process control for chemical industries.
- **Tools used/ developed:** Ansys-polyflow, Aspen, IP 21, FORTRAN, CFD code for polymer flow simulations.
- **Patents/Publications:** 13 Patents (5 published, 8 filed), 14 publications in high impact journals, 15 conference papers and presentations.
- **Accomplishment:** Worked on innovative projects related to chemical, minerals, medical devices, petroleum, automobile, paint, fiber industries and defense & research labs.

WORK EXPERIENCE:

1. July 2015 to till date
Designation: Lead Scientist
Organization: Aditya Birla Science & Technology Company Ltd. Navi Mumbai, India.
Role: Team lead
Nature of Work: Managing and guiding team. Polymer Rheology and processing, Modeling and simulation of Lyocell fibre processing, Polymer rheology, Additive adsorption, Process control. PFD, P&ID, etc. New solvent for cellulose dissolution, dope rheology, fibre spinning.

2. May 2012 to June 2015
Designation: Sr. Scientist
Organization: Aditya Birla Science & Technology Company Ltd. Navi Mumbai, India.
Role: Team lead
Nature of Work: Managing and guiding team. Polymer Rheology and processing, Modeling and simulation of viscose fibre processing, Polymer rheology, Additive adsorption, Process control. PFD, P&ID, etc

3. April 2010 to April 2012
Designation: Sr. Scientist
Organization: Tata Research Development & Design centre (TRDDC), A division of Tata Consultancy Services (TCS), Pune, India.
Role: Program manager and consultant

*4. **3** April 2005 to March 2010*
Designation: Scientist
Organization: Tata Research Development & Design centre (TRDDC), A division of Tata Consultancy Services (TCS), Pune, India.
Role: Associate consultant, project manager

5. April 1998 to March 2005
Designation: Researcher scientist
Organization: Tata Research Development & Design centre (TRDDC), A division of Tata Consultancy Services (TCS), Pune, India.
Role: Team member

Nature of Work: Polymer-nano material research, Coatings, CFD, Modelling and simulation of polymer processing, polymer and suspension rheology, nano particles synthesis and dispersion, water treatment, etc.

RESEARCH CONTRIBUTIONS:

Selected Industry Sponsored Projects

1. Process modeling & simulations of viscose & Lyocell fiber manufacturing process, Process control and implementation, adsorption studies, new method development, lab & pilot experiments, plant trials, data generation, basic engineering. Role Project Lead.
2. Polymer design project for medical devices Inc. Replacing Teflon with injection moldable polymer with properties similar to Teflon. My role is technical lead and handling offshore and onsite team.
3. Worked on automation of Soda Ash plant of Tata Chemical limited, based on model predictive control methodology. My job involved understanding of processes, plant data collection, data analysis and data optimization.
4. Waste treatment of copper based waste slurry for Chemtal Rai Ltd., successfully removed copper from waste slurry to copper oxide as value added product.
5. Separation of lignin from black liquor for Pudamjee Paper Mill. Demonstrated pilot plant for treating black liquor.
6. Worked for the project on optimization of aluminium-silicon slurry for specialty coating in collaboration with GE-CRD USA to optimize the rheology of the aluminum-silicon metal powder slurry for improvement in the uniformity of the coating on a turbine blade.
7. Scientific design of pigment dispersants in paint formulation with ICI India. The objective of this work is to establish a scientific framework for selection and design of dispersant using molecular modelling methodology. Studied effect on rheology of paint with different surfactants on titanium oxide pigments.

Internal Research Projects

1. Nanofluids for enhance heat transfer applications in collaboration with ARCI Hyderabad,
2. Product development for fluoride and arsenic removal technique using coated rice husk ash and Swach® water filter.
3. Worked on polymer extrusion process simulation. This is a collaborative work with Dr. Ashsih Lele, NCL, Pune. Developed a tool for polymer flow simulations based on Arbitrary Lagrangian Eulerian (ALE) finite element method. Results compared with commercial simulator POLYFLOW® (Fluent)
4. Nano silver/gold particles synthesis and characterization in collaboration with Dr. Murli Sastry, NCL.

ACADEMIC QUALIFICATIONS

Ph.D, *in Chemical Engineering* from **Indian Institute of Technology Bombay**, Dec 2009

M.E *in Chemical Engineering* from **Indian Institute of Science**, Bangalore, Jan 1998

B. Tech *in Chemical Engg.* from **Laxminaryan Institute of Technology**, Nagpur, 1996

COMPUTATIONAL TOOLS DEVELOPED

- 2D simulation tool for polymer extrusion process
- Polymer flow simulations (CFD) tool using FEM
- Parameter estimation tool for polymer constitutive equation based on the rheology of the melt

PROJECTS GUIDED

- Simulation of polymer tube extrusion.
- Phase transfer study of nano-alumina suspension from aqueous to non-aqueous medium
- Comparison of rheo-optic data using Arbitrary Lagrangian Eulerian based finite element method

AWARD/ RECOGISITON

- Selected for Tata Innovista 2012 final.
- Received an award and certificate from CTO, TCS as part of SWACH water filter team.
- Dr. Murli Sastry's acknowledged my contribution in characterizing gold nano particles, published in Nature Materials *(2004)*

WORKSHOPS/ TRAININGS

1. Training on POLYFLOW commercial S/W, Oct 4-5 (2007), Pune , India.
2. Workshop on Nanotechnology at NIAS, January 20-23 (2009) Bangalore
3. Leadership workshop, TCS, Pune (2008)

PERSONAL INFORMATION

Date of Birth	:	September 7th , 1974		
Marital Status	:	Married		
Hold Passport	:	Yes	Visits outside India	:Greece, Italy, Sweden

PATENTS:

1. Arsenic removal from drinking water by using rice husk ash based filter medium (Patent no. 206230)
2. Fluoride removal from drinking water by using rice husk ash based filter medium (Patent no. 207190)
3. Polymer melt extrusion which has potential use in die design, US 8311787
4. Defluoridation of waste water, application no. 2683/MUM/2010
5. Defluoridation device, WO 2012042531 A1
6. Arsenic Removal Filter Using Iron Powder, Ferric Hydroxide Coated Rice Husk Ash, PCT/IN2012/ 000098.
7. Preparation of nanofluids for heat transfer application, 20150048272.
8. Nanocoolants for use in Heat Transfer Applications, 2812/MUM/2011
9. Arsenic removal using nano iron coated RHA, Patent application number, 315/MUM/2012.
10. A process for synthesis of doped titania nanoparticles having photocatalytic activity in sunlight, Patent No. US9006124
11. A method for preparing cellulose dope, Patent application no.201621021087
12. High tenacity cellulosic fibre from solvent spinning, patent application no. 201621021200
13. A continuous process xanthation of alkali cellulose patent application no 201721038020

REFEREED PUBLICATIONS

Journal

1. Titania nanofluids with improved photocatalytic activity under visible light, *Colloids and Surfaces A Physicochemical and Engineering Aspects (2015) 486*
2. Stable nanofluids for heat transfer applications, *Journal of Heat Transfer, (2013) 136(2).*

3. Continuous synthesis of functional silver nanoparticles using microreactor: Effect of surfactant and process parameters, *Chemical Engineering and Processing: Process Intensification 62 (2012): 69–77*
4. Numerical and experimental studies on extrudate swell of branched polyethylene through axisymmetric and planar dies*, J Polym Eng 31 (2011): 217–221*
5. Removal of fluoride from drinking water using aluminum hydroxide coated rice husk ash, in *Journal of Hazardous Materials 185 (2011), 1287-1294*
6. Extrudate Swell of Linear and Branched Polyethylenes: A Numerical Study and Comparison with Experimental Results, in *Journal of Non-Newtonian Fluid Mechanics* 166 (2011) 12–24
7. Prediction of extrudate swell in polymer melt extrusion using an Arbitrary Lagrangian Eulerian (ALE) based finite element method, *Journal of Non-Newtonian Fluid Mech*, 156 (2009) 21-28
8. Reconciliation of size–density bivariate distributions over a separating node', *in Particuology Journal* 6 (2008) 167-172
9. Simulation of viscoelastic flows of polymer solution in contraction flow in *Journal of Non-Newtonian Fluid Mechanics, 143* (2007) 157-169
10. DMAIC Approach in Rural Technology—An Application to Making of Water Filters, *Transactions - Indian Ceramic Society (2006) 65(4) 215-221*
11. Study of the principles of innovation for the BOP consumer- the case of a rural water filter in *Int. J of Innovation & Technology Mgmt (2005)*
12. Studies on the Reversible Aggregation of Cysteine-Capped Colloidal Silver Particles interconnected via Hydrogen Bonds*, Langmuir*, 17 (2001), 6262-6268.
13. Alternative mechanisms of drop break in stirred vessels, Chem. Engg. Sci. 53 (1998) 3269-3280.
14. Erratum to "The sensitivity of B3LYP atomization energies to the basis set and a comparison of basis set requirements for CCSD(T) and B3LYP"*, Chemical Physics Letters (1998) 287(1)*

Conferences

1. Surface Modification of Titania Nanoparticles using Ultrafine Grinding and Its Effect on Photocatalytic Activit, 5th Asian Particle Technology Symposium, National University of Singapore (2012)
2. An Engineering Approach to Produce Stable Nanoparticles Dispersion for Industrial Applications, 5th Asian Particle Technology Symposium, National University of Singapore (2012)
3. Numerical and Experimental Studies on Extrudate Swell of Branched Polyethylenes through axisymmetric and planar Dies, at International Conference Polymer Processing and Characterization (ICPPC-2010), Kottayam 15-16, Jan 2010. This paper will be appeared in special issue of Polymer Engineering journal
4. Comparison of rheo-optic data using an Arbitrary Lagrangian Eulerian (ALE) based finite element at Symposium on Rheology of Complex Fluids, January 4-9, 2010, Indian Institute of Technology Madras, Chennai, India.
5. Preparation of nano alumina polymer composite, at Asian Particle Technology Symposium (APT2009), Sep 2009, New Delhi, India
6. Numerical and Experimental Studies on Extrudate Swell of Linear and Branched Polyethylenes, PPS25, Feb 09
7. Analysis of Free Surface Flow in Extrusion Film Casting Using Experiments and Simulations, PPS 25, Feb 09
8. Numerical and experimental studies on die swell in polymer melt extrusion' PPS-24 -2008, Jun 14-19, Salerno, Italy
9. Analysis of free surface flow in extrusion film casting using experiments and simulations' Book of Abstracts of PPS-24 -2008, June 14-19, Salerno, Italy, pp 31.
10. Presented a paper on 'Predictions of die swell in polymer extrusion,' at the prestigious *Workshop on Numerical Methods for Non-Newtonian Flows (WNMNNF–2007)*
9. Data reconciliation of bivariate distributions has been presented at MPT 2007 held at IIT Mumbai

10 A novel water filter technology for rural areas, 28th WEDC Conference on Sustainable environmental sanitation and Services, 18-22 Nov' 2002 Kolkata.

11. Utility and scope of novel water filter technology in rural areas, Proceedings of IWRA Regional Symposium, 27-30 Nov'2002, New Delhi. Vol. 1. pp II 62-73.