**SAGAR GADE**

1706 N Elm St. Apt. 7 Phone: (573) 201-1968

Rolla, MO 65401 Email: svgwcc@mst.edu

**EDUCATION**

**Ph.D. (Chemistry**) GPA: 3.9

Missouri University of Science and Technology, Rolla, MO expected Oct 14

**Master of Technology (Paint Technology)**  GPA: 3.8

Institute of Chemical Technology, Mumbai, India Aug 04 – May 06

**Bachelors of Technology** **(Paint Technology)** GPA: 3.8

Institute of Chemical Technology, Mumbai, India Jul 00 - May 04

**SKILL SUMMARY**

1. Experience in coating industry in formulating, scale up and testing of paints with different resin chemistries for various applications, specialize in architectural and wood coatings.
2. Cross-functional experience in colloidal science with a strong academic background in coatings and polymer chemistry
3. Extensive experience in developing colloidal unimolecular nano particles with thorough understanding of colloidal chemistry

**PROFESSIONAL EXPERIENCE**

**Graduate Teaching Assistant** August 08 – May 13

**Missouri University of Science and Technology - Chemistry**

* Conducted lectures, experiments and grading for undergraduate chemistry lab course (Chem 02 and Chem 328 )

**Missouri University of Science and Technology – Coatings Institute** August 08 – Present

* Conducting lectures and lab tours (demo – paint making and testing )
* Teach to formulate and prepare paints and tests
* Maintain Missouri S&T Coating Institute Webpage (Documentum, Terminal 4)

**Senior chemist** July 06 - July 08

**Masco Coatings Research Center (BEHR Process Paints (India) Pvt. Ltd.)**

1. Involved in setting up R&D lab and storage facility.
2. Extensive experience in raw material consolidation, coating formulation, testing and commercialization of architectural and wood coatings.
3. Developed and formulated exterior clear coats utilize sol-gel chemistry to prepare nano to meso-scale UV-blocking metal-oxo-clusters.
4. Group Leader on work involving changing entire colorant line to low VOC colorants in paint formulations.
5. Involved with cost reduction efforts, trouble shooting and technical service at production end and scale up operations
6. Six Sigma Green Belt Certificate from Sutherland Global Services

**Factory Trainee** May 03 – June 03

**Resins and Plastics Limited (India)**

Worked on acrylic, urethane, alkyds, polyesters and epoxy resin synthesis and analysis

**RESEARCH EXPERIENCE**

**Graduate Research Assistant**  Aug 08 - Present

**Missouri University of Science and Technology, Rolla, MO**

**Research toward PhD**

* Currently working on synthesis of colloidal unimolecular particles (CUP) based on MMA-MAA and MMA-MAA-PEG copolymers, CUP based on aziridine modified amino functional acrylate and their use as potential curing agent for epoxy systems, application of CUP system in paint manufacturing.
* Currently working on synthesis of EA-AA CUP particles and their use as freeze thaw stabilizer in coatings.
* Demonstrated the synthesis of stericaly hindered amine for slow curing in amino modified polyesters for polyurea 2K system
* **Comprehensive Research Topic**. Study of swelling and degradation of polyethylene oxide-benzene tetra carboxylic acid / anhydride hydrogels as function of i) molecular weight of polyethylene oxide, ii) crosslinking density and iii) pH of water

**Research toward industrial projects**

* TiO2 replacement project **– Encapsys**
* Developedtraining module and questionnaire for ‘Elimination of Human and Process Contaminants’ short course **– GM**
* Testing – GPCfor molecular weight determination of polymer, Q-Fog, Q-UV, MFFT, Freeze-Thaw, Scrub, Tg by DSC **– US Polymer, Bung, Battelle, Johns Manville**

**Masters Research** Aug 04-May06

* Formulation and synthesis of heat insulating coatings and paints utilize ceramic, glass and polymeric hollow spheres and foamed cement.

**Bachelors Research**

* Worked on synthesis of acrylic based pressure sensitive adhesives for plastic laminates

**INSTRUMENTS**

Nuclear Magnetic Resonance (**NMR**), Differential Scanning Calorimeter (**DSC**), Thermal Gravimetric Analysis **(TGA)**, Gel Permeation Chromatography (**GPC**), Fourier Transform Infra-Red Spectroscopy (**FTIR**), Particle Size Analyzer (**DLS**) , Micro Indenter, Bubble Surface Tensiometer, Polarimetry, UV-Visible Spectroscopy, Minimum Film Formation Temperature (**MFFT**) System, Pycnometer, Gloss meter, Atlas UV2000 Weatherometer (**Q-UV**), Cyclic Corrosion Testers (**Q-Fog**), Taber Abrasion, Linear Abrasion, Pencil Hardness, Mechanical Dry Time, Scrub And Stain Resistance, Gloss, Instron, Surface Tensiometry, UV Curing Oven, Advance Colorimetry And Spectrophotometry, Fusion Microwave UV System, Patti Elcometer for Adhesion, Scrub Testing, Flash Point, Dry Time, Impact Testers, Sand Abrader, Mandrels, etc. for testing application and evaluation of coatings. Viscometry: Rheometer, Cone and Plate, Garner Viscosity Tubes (Bubbles), Zahn Cup, Ford Cups, Stormer.

**PUBLICATIONS**

**Manuscript under preparation**

1. Synthesis of EA-AA CUP polymer and their effect on freeze thaw stability of waterborne paint,Gade, S.V.; Van De Mark, M.R.
2. Synthesis of EA-AA CUP polymer and their effect on Bernard cells and wet edge retention during drying of waterborne paint,Gade, S.V.; Van De Mark, M.R.
3. Synthesis of amine functional colloidal unimolecular polymer (CUP) particles and their use as cross-linker for epoxy coatings,Gade, S.V.; Hancock, C.; Van De Mark, M.R.

**In print**

1. “Molecular Weight (Mn) and Functionality Effects on Cup Formation and Stability”, Natu, A.M.; Gade, S.V.; Chen, M.; Hancock, C.; Riddles, C.; Van De Mark, M.R., Journal of Coating Technology, 2013
2. “Synthesis of sterically hindered polyamine for slow curing polyurea coatings”, Shooshtari, K.A.; Gade, S.V.; Van De Mark M.R., PMSE Preprints (2011)
3. “New Developments in Coating Additives-I,” Sadekar, A.; Gade, S.; Bodke, R., Paintindia, 54, 69-86 (2004)
4. “New Developments in Coating Additives-II,” Sadekar, A.; Gade, S.; Bodke, R., Paintindia, 54, 51-68 (2004)

**PRESENTATIONS**

**Oral**

1. “Synthesis and Characterization of a New 2-9 Nanometer Diameter Technology: Colloidal Unimolecular Polymer (CUP) Particles which are Solvent Free”, Van De Mark, M.R.; Natu, A.M.; Gade, S.V.; Chen, M.; Hancock, C.; Riddles, C., Mistry, J.K., 2013 Midwest Regional Meeting, Springfield, MO (2013)
2. “Synthesis of amine functional colloidal unimolecular polymer (CUP) particles and their use as cross-linker for epoxy coatings”, Gade, S.V.; Hancock, C.; Van De Mark, M.R., 246th ACS National Meeting and Exposition, Indianapolis, Indiana (2013)
3. “Molecular Weight (Mn) and Functionality Effects on Cup Formation and Stability”, Van De Mark, M.R.; Natu, A.M.; Gade, S.V.; Chen, M.; Hancock, C.; Riddles, C., 40th Annual Waterborne Symposium, New Orleans, LA (2013)

**Posters**

1. “Colloidal Unimolecular Polymer (CUP) Particles as Epoxy Curing Agents”, Gade, S.V.; Hancock, C.; Van De Mark M.R.; American Coating show 2012 Indianapolis, IN, (2012), P-13
2. “Synthesis of sterically hindered polyamine for slow curing polyurea coatings”, Shooshtari, K.A.; Gade, S.V.; Van De Mark M.R., 242nd ACS National Meeting & Exposition, Denver, CO, 2011 (2011), PMSE-58. Also, presented in Graduate Research Showcase (GRS), Missouri S&T, Rolla, Missouri (2012)

**ARTICLES**

1. “Aluminum Leafing Pigments”, Gade, S.V., Missouri S&T Coatings Institute Newsletter, Volume 11 Issue 3 (2014)
2. “Epoxy coatings formulated for application on green concrete”, Gade, S.V.; Van De Mark M.R.; Durability + Design, Technology Publishing Company, 2014 Volume 4, Number 1, pp 34-42
3. “Recycle of powder coating manufacturing reclaim and end user over spray”, ”, Gade, S.V., Missouri S&T Coatings Institute Newsletter, Volume 10 Issue 5 (2013)
4. “ Selection Criteria for Pigmented UV Cure Coatings”, Gade, S.V., Missouri S&T Coatings Institute Newsletter, Volume 8 Issue 4 (2012)
5. “Powder slurry coatings”, Gade, S.V., Missouri S&T Coatings Institute Newsletter, Volume 8 Issue 3 (2011)
6. “Application of hollow microspheres in coatings”, Gade, S.V., Paints and coatings industry magazine, May 2011
7. “Application of Hollow Microspheres in Coatings’, Gade, S.V., Missouri S&T Coatings Institute Newsletter, Volume 7 Issue 1 (2011)

**HONORS**

1. The Shelby F. Thames Best Paper Award, 2013, 40th Annual Waterborne Symposium
2. Outstanding graduate teaching assistant award 2012-13, Chemistry Department, Missouri S&T
3. Outstanding graduate teaching assistant award 2010-11, Chemistry Department, Missouri S&T

**REFERENCE**

Michael R. Van De Mark, Director

Missouri S&T Coatings Institute(Formerly UMR)

651 W. 13th St. BOM#2

Rolla, MO 65409-1020

President, Rolla Coatings Inc.

mvandema@mst.edu

Phone 573-341-4419