

Siddharth V. Patwardhan

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OBJECTIVE: To obtain a challenging research position in the field of materials science and engineering.

EDUCATION:

- **Ph. D.** (June 2003) and **M. S.** (Jan 2002) in Materials Science and Engineering, University of Cincinnati, Ohio, USA.
- **Bachelor** of Petrochemical Engineering (Aug 2000), University of Pune, India (GPA 3.9 / 4.0).

SIGNIFICANT COURSES:

Polymer Characterization
Properties of Polymers
Zeolites: *Synthesis, Characterization, Applications*

Rubber Science and Engineering
Nano-Structured Powders
Biochemistry

GRADUATE RESEARCH:

See below for list of publications.

- **Ph. D. Thesis Topic:** Bioinspired and Biomimetic Materials Synthesis, Silicification and Biosilicification.
- **Masters' Thesis:** "*Synthesis of Silica Nano and Micrometer Size Structures at Neutral pH and Under Ambient Conditions*".
- Working on synthesis of nano particles by polymerizations in supercritical carbon dioxide and water micro-emulsions.

PROJECTS:

- **Senior Project:** "*Design, Modeling and Simulation of Reactor for Low Density Polyethylene (LDPE) Manufacturing*".
- **Term papers:**
 - "*Vapor-Liquid Equilibrium (VLE) of Polymer-Solvent System*".
 - "*Sol-Gel Synthesis of Zeolites*".
 - "*Fullerene-Silica Hybrid Materials: Synthesis, Optical Characterization and Application*".

WORK EXPERIENCE:

Summer Intern: Supreme Petrochem Limited, Nagothane, India.

Summer 1999

- Studied the Polystyrene manufacturing plant (GPPS and HIPS) and the polymerization reactors in detail.
- Studied all the utility sections, testing and processing laboratories.

Teaching Assistant

May–August 2000

Dept. of Chemical Engineering, Vishwakarma Institute of Technology (V.I.T.), Pune, India

- Set up the laboratories for Physical Chemistry and Unit Operations.
- Prepared answer key as well as assessments for 8 core courses of Chemical, Petrochemical and Polymer Engineering.

INVENTIONS AND PATENTS:

1. Invention Disclosure (UC 101-070): "*Controlled Synthesis of Silica Nano and Microstructures at Modest Conditions suitable for Economical Industrial Manufacturing*", 2001.
2. Invention Disclosure (UC 102-065): "*Economical Process for Preparation of Germania Particles*", 2002.
3. Provisional patent: "*Formation of Fiber-Like Amorphous Silica Structures by Externally Applied Shear*", August 5, 2002.

PUBLICATIONS:

1. Patwardhan, S. V. and Clarson, S. J., "Silicification and Biosilicification Part 1", Polymer Bulletin, **48(4-5)**, 367-371, 2002.
2. Patwardhan, S. V. and Clarson, S. J., "Silicification and Biosilicification Part 2", In: *Synthesis and Properties of Silicones and Silicone-Modified Materials*, S.J. Clarson, J.J. Fitzgerald, M.J. Owen, S.D. Smith, M.E. Van Dyke, eds., (ACS Symposium Series, 2003).
3. Patwardhan, S. V., Mukherjee, N. and Clarson, S. J., "Effect of Process Parameters on the Polymer Mediated Synthesis of Silica at Neutral pH", Silicon Chemistry, **1(1)**, 47-54, 2002.
4. Patwardhan, S. V., Mukherjee, N. and Clarson, S. J., "Formation of Fiber-Like Amorphous Silica Structures by Externally Applied Shear", Journal of Inorganic and Organometallic Polymers, **11(2)**, 117-121, 2001.
5. Patwardhan, S. V., Mukherjee, N. and Clarson, S. J., "The Use of Poly-L-Lysine to Form Novel Silica Morphologies and the Role of Polypeptides in Biosilicification", Journal of Inorganic and Organometallic Polymers, **11(3)**, 193-198, 2001.
6. Patwardhan, S.V., Mukherjee, N., Durstock, M. F., Chiang, L. Y. and Clarson, S.J., "Synthesis of C₆₀ Fullerene - Silica Hybrid Nano Materials", Journal of Inorganic and Organometallic Polymers, **12(1-2)**, 46, 2002.
7. Patwardhan, S. V. and Clarson, S. J., "Silicification and Biosilicification Part 3", Silicon Chemistry, **1(3)**, 207-214, 2002.
8. Patwardhan, S. V. and Clarson, S. J., "Silicification and Biosilicification Part 4", Journal of Inorganic and Organometallic Polymers, **12(3-4)**, 109, 2002.
9. Patwardhan, S. V. and Clarson, S. J., "Silicification and Biosilicification Part 5", Materials Science and Engineering C., in press.
10. Patwardhan, S. V. and Clarson, S. J., "Silicification and Biosilicification Part 6", Journal of Inorganic and Organometallic Polymers, **13(1)**, 49-53, 2003.
11. Clarson, S. J., Whitlock, P. W., Patwardhan, S. V., Brott, L. L., Naik, R. R., Stone, M. O., "Synthesis of Silica Nanostructures at Neutral pH Using Catalytic Polypeptides", Polymeric Materials: Science & Engineering, **86**, 81, 2002.

SKILLS:

Hands on Experience With: SEM, DSC, TGA, FTIR, EDS, SALS, XRD, injection Molding and Screw Extruder.

Familiar with: SAXS, TEM, Instron, Mass Spec., NMR, XPS, ATR and Temperature Programmed Desorption (TPD).

HONORS AND OTHER ACTIVITIES:

- Received University Graduate Scholarship (UGS) & Research Assistantship for Graduate studies.
- Ranked 3rd, 2nd and 5th in the University during sophomore, junior and senior years, respectively.
- Attended Second Annual Graduate Student Workshop / Seminar, Ohio Supercomputer Center, Columbus, Aug 2001.
- Organized & attended Extramurals'99 & ChEMIT-2000, State Level Paper Presentation Competitions cum Seminars for undergraduate Chemical Engineering students.
- Held post in Public Relations committee of Indian Students Association, University of Cincinnati.
- Life member of MENSA, Member of American Chemical Society (ACS), Working Association of Students of Petrochemical Engineering (WASP).
- Led several treks and folk-dance groups, played Kho-Kho (Indian Game) at National and State level.