

Valerie Sheares Ashby

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I. EDUCATION

Undergraduate: B.S., University of North Carolina at Chapel Hill (8/88)
Graduate: Ph.D., University of North Carolina at Chapel Hill (5/94)

II. PROFESSIONAL POSITIONS

8/03-present Associate Professor, University of North Carolina at Chapel Hill. *Synthesis of High Performance Polymers via Nickel Catalysis; Polymerization of Polar, Functionalized Dienes; Fabrication of Quasicrystal-Polymer Composites; Synthesis of Functionalized Biomaterials.*

8/03-1/04 Sabbatical Leave, Massachusetts Institute of Technology, Cambridge, MA (Professor Robert Langer)

8/02-7/03 Associate Professor, Iowa State University, Department of Chemistry, Ames, Iowa.

1/96-7/02 Assistant Professor, Iowa State University, Department of Chemistry, Ames, Iowa.

9/94-12/95 National Science Foundation Postdoctoral Fellow, NATO Postdoctoral Fellow, Johannes Gutenberg University of Mainz Institute for Organic Chemistry, Mainz, Germany. *Synthesis of ABC Block Copolymers.* Advisor: Professor Reimund Stadler (deceased)

5/93-8/93 Visiting Scientist, Eastman Chemical Company, Kingsport, Tennessee. *Examination of the Role of Catalysts in Color Body Origin in Poly(ester amide)s.*

5/92-8/92 Visiting Scientist, IBM, Almaden Research Center, San Jose, California. *Synthesis of Thiophene-Containing Poly(ether imide)s.*

1/91-8/94 Research Assistant, University of North Carolina at Chapel Hill. Ph.D. Dissertation: *Synthesis and Characterization of Thiophene-Based Poly(arylene ether ketone)s and Poly(arylene ether sulfone)s.* Advisor: Professor Joseph M. DeSimone

9/89-12/90 Teaching Assistant, University of North Carolina at Chapel Hill. Instruction of undergraduate analytical and introductory organic synthesis laboratories.

III. HONORS and AWARDS

1. Institute for Defense Analysis Faculty Program (1/02-12/03)
2. President's and Provost's Award for Iowa State University (5/02)
3. Honored by the American Chemical Society as one of the top 12 young female chemists in the country (8/02)
4. Iowa State University, College of Liberal Arts and Sciences Master Teacher (8/01)
5. Iowa State University Teacher of the Year, College of Liberal Arts and Sciences (4/01)
6. 3M Young Faculty Award (4/01)
7. Outstanding Professor- given by the Department of Chemical Engineering undergraduate students (5/01)
8. Outstanding Faculty Member – given by the Interfraternity and Panhellenic Council at Iowa State University (5/01)
9. 3M Young Faculty Award (4/00)
10. Nominated for Iowa State University Teacher of the Year (4/97, 4/98, 4/99, 4/00)
11. Early Excellence in Research Award, Iowa State University (4/00)
12. 3M Young Faculty Award (4/99)
13. Early Excellence in Teaching Award, College of Liberal Arts and Sciences, Iowa State (4/99)
14. Dupont Young Faculty Award (1/98-12/00)
15. National Science Foundation Faculty Early Career Development Award (1/98-12/02)
16. 1995 ACS Polymeric Materials: Science and Engineering and Polymer Chemistry Division Sherwin Williams Student Award (Presented 3/96)
17. National Science Foundation Postdoctoral Fellowship in Chemistry (2/95-1/96)
18. NATO/National Science Foundation Postdoctoral Fellowship in Science (9/94-2/95)
19. Kodak Corporate Research Fellowship (8/91-5/94)

IV. PUBLICATIONS

1. "Surfactant salvation effects and micelle formation in ionic liquids", Anderson, J.L.; Pino, V.; Hagberg, E.C.; Sheares, V.V.; Armstrong, D.W. *Chem. Comm.* **2003**, 19, 2444.
2. "A versatile method for tuning the chemistry and size of nanoscopic features by living free radical polymerization", von Werne, T.A.; Germack, D.S.; Hagberg, E.C.; Sheares, V.V.; Hawker, C.J.; Carter, K.R. *J. Am. Chem. Soc.* **2003**, 125 (13), 3831.
3. "Fabrication and wear resistance of Al–Cu–Fe quasicrystal-epoxy composite materials", Bloom, P.D.; Baikerakar, K.G.; Andereg, J. W.; Sheares, V.V. *Materials Science and Engineering A*, **2003**, 360 (1-2), 46
4. "Synthesis and Characterization of Diblock and Gel-Forming Pentablock Copolymers of Tertiary Amine Methacrylates, Poly(ethylene glycol), and Poly(propylene glycol)", Anderson, B. C.; Cox, S. M.; Bloom, P. D.; Sheares, V. V.; Mallapragada, S. K. *Macromolecules* **2003**, 36, 1670.

5. "A series of New High-Performance Materials Based on Poly(4'-fluorophenyl-bis(4-phenyl)phosphine oxide)", Rusch-Salazar, L.; Sheares Ashby, V. *J. Polym. Sci., Pt. A* **2003**, 41(14), 2277.
6. "Al-Cu-Fe Quasicrystal/Ultra High Molecular Weight Polyethylene Composites as Biomaterials for Acetabular Cup Prosthetics", Anderson, B.; Bloom, P.D.; Sheares, V.V.; Mallapragada, S.K. *Biomaterials* **2002**, 23, 1761.
7. "A Novel Polyamide 12/Al-Cu-Fe Quasicrystal Composite", Liu, Y.; Bloom, P.D.; Sheares, V.V.; Otaigbe, J.U. *Mat. Res. Soc. Symp. Proc.* **2002**, 702, 339.
8. "Polar, Functionalized Diene-Based Materials. 4. Polymerization Studies of 2,3-Bis(4-ethoxy-4-oxobutyl)-1,3-butadiene and Copolymerization with Styrene", Beery, M.; Rath, M.K.; Sheares; V.V. *Macromolecules* **2001**, 34, 2469.
9. "Novel Poly(paraphenylene)s via Nucleophilic Aromatic Substitution of Poly(4'fluoro-2,5-diphenylsulfone)", Bloom, P.; Sheares, V.V. *Macromolecules* **2001**, 34, 1627.
10. "Development of Al-Cu-Fe Quasicrystal-Poly(*p*-phenylene sulfide) Composites", Bloom, P.D.; Baikerakar, K.G.; Anderegg, J.W.; Sheares, V.V. *Mat. Res. Soc. Symp.* **2001**, 643.
11. "Synthesis and Characterization of Water Soluble Block Copolymers for pH-Sensitive Delivery", Anderson, B.; Bloom, P.D.; Sheares, V.V.; Mallapragada, S.K. *Mat. Res. Soc. Symp.* **2001**, 662.
12. "Polar, Functionalized Diene-Based Materials. 5. Free Radical Polymerization of 2-[(*N*-Benzyl-*N*-methylamino)methyl]-1,3-butadiene and Copolymerization with Styrene", Wu, L.; Sheares; V.V. *J. Polym. Sci., Polym. Chem. Ed.* **2001**, 39, 3227.
13. "Synthesis of Poly(*p*-phenylene) Macromonomers and Multiblock Copolymers", Bloom, P.D.; Sheares, V.V. *J. Polym. Sci., Polym. Chem. Ed.* **2001**, 39, 3505.
14. "Bilayer Nanocomposite Molecular Coatings from Elastomeric/Rigid Polymers: Fabrication, Morphology and Micromechanical Properties", Luzinov, I.; Julthongpiput, D.; Bloom, P.D.; Sheares, V.V.; Tsukruk, V.V. *Macromol. Symp.* **2001**, 166, 227.
15. "Polar, Functionalized Diene-Based Materials. 1. Bulk, Solution and Emulsion Free Radical Polymerization of 2-Cyanomethyl-1,3-butadiene", Jing, Y.; Sheares, V. V. *Macromolecules* **2000**, 33, 6255.
16. "Polar, Functionalized Diene-Based Materials. 2. Free Radical Copolymerization Studies of 2-Cyanomethyl-1,3-butadiene with Styrene and Acrylonitrile", Jing, Y.; Sheares; V.V. *Macromolecules* **2000**, 33, 6262.
17. "Polar, Functionalized Diene-Based Materials. 3. Free Radical Polymerization of 2-[(*N,N*-Dialkylamino)methyl]-1,3-butadienes", Sheares; V.V., Wu, L.; Li, Y.; Emmick, T.K. *J. Polym. Sci., Polym. Chem. Ed.* **2000**, 38, 4070.
18. "Development of Novel Polymer/Quasicrystal Composite Materials", Bloom, P.D.; Baikerakar, K.G.; Otaigbe, J.U.; Sheares, V.V. *Materials Science and Engineering A.* **2000**, 294-296, 156.

19. "Synthesis and Characterization of Poly[[1,1'-biphenyl]-4,4'-diyl[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]]", Havelka, P.A.; Sheares, V.V. *Macromolecules* **1999**, 32, 6418.
20. "Alkyl-Substituted Poly(2,5-benzophenone)s Synthesized via Ni(0)-Catalyzed Coupling of Aromatic Dichlorides and Their Miscible Blends", Pasquale, A.J.; Sheares, V.V. *J. Polym. Sci., Polym. Chem. Ed.* **1998**, 36, 2611.
21. "Novel Poly[3-(*p*-substituted)benzoyl-2,5-thiophenes] via Nickel(0)-Catalyzed Coupling Polymerization", Wang, J.; Vonhof, T.; Sheares, V.V. *Macromolecules* **1998**, 31, 6769.
22. "Useful Model Systems for the Study of S_{RN}1 Chemistry in the Synthesis of Poly(arylene ether ketone)s", Dukes, K.E.; Forbes, M.D.E.; Jeevarajan, A.S.; Belu, A.M.; DeSimone, J.M.; Linton, R.W.; Sheares, V.V. *Macromolecules* **1996**, 29, 3081.
23. "Isometric Poly(benzophenone)s: Synthesis of Highly Crystalline Poly(4,4'-benzophenone) and Amorphous Poly(2,5-benzophenone), a Soluble Poly(*p*-phenylene) Derivative", Phillips, R.W.; Sheares, V.V.; Samulski, E.T.; DeSimone, J.M. *Macromolecules* **1994**, 27, 2354.
24. "Thiophene-Based Poly(arylene ether)s - Imide Arylene Ether Ketone Statistical Copolymers", Sheares, V.V.; DeSimone, J.M.; Hedrick, J.L.; Carter, K.; Labadie, J.W. *Polymer* **1994**, 35, 3782.
25. "New Polymerization Methodology: Synthesis of Thiophene-Based Heterocyclic Polyethers", DeSimone, J.M.; Sheares, V.V. *Macromolecules* **1992**, 25, 4235.

V. PATENTS

1. "Functionalized Diene Monomers and Polymers Containing Functionalized Dienes and Methods for Their Preparation", Continuation issued 6/03, Patent No. 6,583,260
2. "Functionalized Diene Monomers and Polymers Containing Functionalized Dienes and Methods for Their Preparation", Continuation Issued 2/02, Patent No. 6,344,538
3. "Functionalized Diene Monomers and Polymers Containing Functionalized Dienes and Methods for Their Preparation", Issued 8/00, Patent No. 6,100,373
4. "Fluorinated Aromatic Monomers and Their Polymerization by Nickel Catalyzed Coupling", Issued 2/03, Patent No. 6,515,101

VI. COLLABORATORS AND STUDENTS:

Collaborators:

Robert Langer (MIT); Edward T. Samulski (UNC); Jon Geibel (Chevron Phillips)

Thesis Advisor and Postgraduate Scholar Sponsor:

Graduate Students

Anthony Pasquale	1998	M.S.	Ph.D. Virginia Tech 2002
Yunxiao Li	1999	M.S.	Symyx Corporation

Pamela Havelka	2000	M.S.	Bayer Corporation
Matt Beery	1999	M.S.	Johnson and Johnson Inc.
Yi Jing	2000	M.S.	
Paul Bloom	2001	Ph.D.	Archer-Daniels-Midland
Olivia Wu	2001	M.S.	Boehringer-Ingelheim Pharmaceuticals, Inc.
Erik Hagberg	2003	Ph.D.	IBM
Melissa Rath	2002	M.S.	ATMI, Danbury, Connecticut
Laura Salazar	2003	Ph.D.	Grandview College
Irene Yang	4 th Year		
Dejan Andjelkovic	3 rd Year		
Janet Maegerlein	2 nd Year		
Benjamin Pierce	1 st Year		
Matthew Cottle	1 st Year		
Jinrong Liu	1 st Year		

Undergraduate Students

Layli Springer - (5/96-7/97), McNair Scholars Program

Tim Folly - (5/96-7/97), PhD. 2003, University of Florida, Gainesville

Shari Terbstra - (10/96-5/98), Women in Science and Engineering Program, presently employed at Becker Underwood Company

Ingrid Roseborough - (11/96-12/97), McNair Scholars Program, presently a University of Chicago medical student

Matt Beery - (1/97-8/97), presently employed at Johnson and Johnson

Tatanya Emmick - (5/96-8/99), presently employed at Kemin Corp.

Uzoamaka Obikeze - (5/98-5/99)

Brian Vanhatten - (5/99-5/00)

Glen Post - (8/98-5/99), presently a University of Colorado chemistry/biochemistry graduate student

Tanya Indelicato - (5/99-5/01), Women in Science and Engineering Program

Maisha Rudison - (8/98-5/02), McNair Scholars Program

Alicia Thomas - (5/01-5/02), McNair Scholars Program

Brandon Goodridge - (5/01-12/03), Junior, Iowa State University

Irene Mora - (11/03-), Senior, University of North Carolina at Chapel Hill

High School Students

Adina Rollins - (5/96-6/97), Women in Science and Engineering Program, presently an Ohio State chemical engineering senior

Chrystal Martin - (6/97-9/98), Women in Science and Eng. Program, presently a University of Minnesota chemistry junior

Jasmyn Dyer - (5/00-8/00), PIPELINES (Program in Pursuit of Excellence and Learning in Engineering and Science), presently an Iowa State University freshman.

(5/02-8/02), PIPELINES (Program in Pursuit of Excellence and Learning in Engineering and Science)

(5/02-8/02), PIPELINES (Program in Pursuit of Excellence and Learning in Engineering and Science)