

Carey Stanton Reed

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EDUCATION

PENNSYLVANIA STATE UNIV.

Ph.D. in Chemistry
Areas of Specialization: Polymer, Organic, and Inorganic Chemistry

UNIV. PARK, PA

Aug. 1991 - Dec. 1996

HIRAM COLLEGE

B.A. in Chemistry and Mathematics
ACS Certification in Chemistry

HIRAM, OH

Sept. 1987 - June 1991

TEACHING EXPERIENCE

Jan. 1997- current	Assistant Professor of Chemistry Penn State Altoona -Chem 6-Problem Solving in Chemistry -Chem 12- Chemical Principles I -Chem 13-Chemical Principles II -Chem 14-Experimental Chem I -Chem 15-Experimental Chem II -Chem 34-Fundamentals of Organic Chemistry I -Chem 35-Fundamentals of Organic Chemistry II -Chem 36-Laboratory in Organic Chemistry -Chem 38-Organic Chemistry I -Chem 39-Organic Chemistry II
1991 -1992	Teaching Assistant, Penn State Univ. -Chem 14-Experimental Chem I -Chem 36-Laboratory in Organic Chemistry
1987-1991	Teaching Assistant, Hiram College

RESEARCH EXPERIENCE

The synthesis and investigation of novel polymer and small molecule systems with an inorganic backbone which have either organic or inorganic side groups. The chemical and physical properties of these polymers depend largely on the choice and relative ratios of the side groups. This versatility in properties results in potential applications such as composite, solid electrolyte, liquid crystalline, and flame retardant materials.

The research performed included the following:

- the synthesis and characterization of calcium hydroxyapatite and polyphosphazene composite materials.
 - the *in situ* polymerization of tetraethyl orthosilicate within a polyphosphazene matrix.
 - the synthesis and characterization of polyphosphazenes as solid state electrolyte materials.
 - the synthesis and investigation of the liquid crystalline properties of cholesterol containing polyphosphazenes.
 - thermal stability and flame retardant studies of polyphosphazenes.
- (Current area of major interest)**

**TECHNICAL
EXPERIENCE**

The characterization of materials was performed using and interpreting:

- Nuclear Magnetic Resonance Spectroscopy
- Gel Permeation Chromatography
- Differential Scanning Calorimetry
- Thermal Gravimetric Analysis
- Infrared Spectroscopy
- Mass Spectral Analysis
- Compression Testing
- Dynamic Mechanical Analysis
- Scanning Electron Microscopy
- Optical Microscopy
- Powder X-Ray Diffraction

PATENT

Allcock, H.R., Coleman, M.M., Reed, C.S., Guigley, K.S. U.S. Patent 5,965,627. (Oct. 12, 1999) "Blends of polyurethane and polyphosphazene and their use as flame-retardant foamed compositions."

PUBLICATIONS

TenHuisen, K.S.; Brown, P.W.; Reed, C.S.; Allcock, H.R. *J. Mater. Sci.: Mater. Med.*, **1996**, 7, 673. "Low Temperature Synthesis of a Self-Assembling Composite: Hydroxyapatite - Poly[bis(sodium carboxylatophenoxy)phosphazene]."

Reed, C.S.; TenHuisen, K.S.; Brown, P.W.; Allcock, H.R. *Chem. Mater.*, **1996**, 8, 440. "Thermal Stability and Compressive Strength of Calcium Deficient Hydroxyapatite - Poly[bis(carboxylatophenoxy)-phosphazene] Composites."

Allcock, H.R.; Kuharchik, S.E.; Reed, C.S.; Napierala, M.E. *Macromolecules.*, **1996**, 29, 3384. "Synthesis of polyphosphazenes with Long Etheric Side Groups: Potential Solid Electrolyte Materials."

Allcock, H.R.; Napierala, M.E.; Olmeijer, D.L.; Cameron, C.G.; Kuharcik, S.E.; Reed, C.S.; O'Connor, S.J.M. *Proc. Intern. Symp. Solid Polym. Electrolytes, Uppsala, Sweden*. August **1996**. "New Macromolecules for Solid Polymeric Electrolytes."

Allcock, H.R.; Napierala, M.E.; Olmeijer, D.L.; Cameron, C.G.; Kurarcik, S.E.; Reed, C.S.; O'Connor, S.J.M. *Electrochimica ACTA*, **1998**, 43: (10-11), 1145-1150. "New Macromolecules for Solid Polymeric Electrolytes."

Allcock, H.R., Coleman, M.M., Taylor, J.P., Guigley, K.S., Reed, C.S. *Proc. Intern. Aircraft Fire & Cabin Safety Research Conference; Fire: Advanced Materials Conference, Atlantic City, NJ*. **1998**. "Tailoring Polyphosphazenes for Aircraft Fire-Resistant Applications."

Bernheim, K.A., Reed, C.S., Allcock, H.R. *Journal of Investigative Medicine.*, **1999**, 47, 42A. "Synthetic Bone: A Polyphosphazene/Hydroxyapatite Composite."

Reed, C.S.; Taylor, J.P.; Guigley, K.S.; Kully, K.S.; Bernheim, K.A.; Coleman, M.M.; Painter, P.C.; Allcock, H.R. *Polym. Eng. Sci.* **2000**, 40: (2), 465-472. "Polyurethane/Poly[bis-(carboxylatophenoxy)phosphazene] Blends and Their Potential as Flame-Retardant Materials."

Flarend, R.; Hasan, M.E.; Reed, C.S. *Proc. 9th International Conference on Accelerator Mass Spectrometry, Nagoyo, Japan*. September **2002**. "Aluminum Nitride as a Novel Aluminum-26 Target Material for Accelerator Mass Spectrometry."

PRESENTATIONS/POSTERS (*indicates presenter)

Allcock, H.R.*; Napierala, M.E.; Olmeijer, D.L.; Cameron, C.G.; Kuharcik, S.E.; Reed, C.S.; O'Connor, S.J.M. *Fifth Intern. Symp. Solid Polym. Electrolytes, Uppsala, Sweden, August 1996*. "New Macromolecules for Solid Polymeric Electrolytes."

Reed, C.S.*; Allcock, H.R.; TenHuisen, K.S.; Brown, P.W. *Perspectives on Industrial Research Conference, Cincinnati, OH*. November **1996**. "Calcium Hydroxyapatite-Poly[bis(sodium carboxylatophenoxy) phosphazene] Composites."

Allcock, H.R.* , Coleman, M.M., Taylor, J.P., Guigley, K.S., Reed, C.S. *Intern. Aircraft Fire & Cabin Safety Research Conference; Fire: Advanced Materials Conference, Atlantic City, NJ. 1998.* "Tailoring Polyphosphazenes for Aircraft Fire-Resistant Applications."

Bernheim, K.A.* , Reed, C.S., Allcock, H.R. *Western Regional Meeting of the American Federation for Medical Research, Carmel, CA. January 1999.* "Synthetic Bone: A Polyphosphazene/Hydroxyapatite Composite."

Flarend, R.*; Reed, C.S. *9th International Conference on Accelerator Mass Spectrometry, Nagoyo, Japan. September 2002.* "Aluminum Nitride as a Novel Aluminum-26 Target Material for Accelerator Mass Spectrometry."

OTHER PROJECTS

Reed, C.S.; TenHuisen, K.S.; Brown, P.W.; Allcock, H.R. Manuscript in preparation. "Solution Precipitation of Calcium Hydroxyapatite - Poly[bis(methoxyethoxyethoxy)phosphazene] Composite."

Allcock, H.R.; Reed, C.S.; Taylor, J.P.; Bernheim, K.A. Manuscript in preparation. "The Thermal Rearrangement of Alkyloxy Phosphazenes."

Allcock, H.R.; Reed, C.S. Thesis Chapter. "Synthesis of Novel Composites of Polyphosphazenes and Silica."

Allcock, H.R.; Reed, C.S.; Bernheim, K.A. Thesis Chapter. "Synthesis of Novel Composites of Poly[bis(methoxyethoxyethoxy)-phosphazene] and Silica."

Allcock, H.R.; Reed, C.S.; Kim, Y.B. Thesis Chapter. "Polyphosphazenes Containing *p*-Hydroxyphenoxy Groups: A Route to the Attachment of Bulky Substitutents."

SIGNIFICANT PROFESSIONAL SERVICE	2001 - current	Faculty Senate member
	2005 - current	Faculty Senate Academic Affairs Committee
	2001 - 2005	Faculty Senate Curricular Affairs Committee
	1997 - current	Penn State Altoona Judicial Board
	2003 - 2005	Applied Chemistry Minor Committee
	2003 - 2004	Applied Science BS Degree Committee
	2001 - 2004	General Chemistry Laboratory Coordinator

SOCIETIES Polymer Division of the American Chemical Society
Polymer Science and Materials Engineering Division of the American
Chemical Society.

AWARDS Miles. Inc. Fellowship. Pennsylvania State University, University Park,
PA, August 1991 - May 1992.

Lubrizol Foundation. Hiram College, Hiram, OH, Sept. 1990 - June
1991

Paul Fall Scholarship. Hiram College, Hiram, OH, Sept. 1989 - June
1991

Garfield Scholarship. Hiram College, Hiram, OH, Sept. 1987 - June
1991

REFERENCES Available upon request.