

I. ACADEMIC/PROFESSIONAL BACKGROUND

Gary W. Beall

Assistant Professor

EDUCATION

| | | | |
|----------------------|------|---------------------------|--------------------|
| Bachelor of Science | 1972 | Tarleton State University | Chemistry |
| Masters of Science | 1974 | Baylor University | Physical Chemistry |
| Doctor of Philosophy | 1975 | Baylor University | Physical Chemistry |

Dissertation

A Spectroscopic and Structural Study of the Rare Earth Tri-hydroxides

Experience

| University/Company | Position | Date |
|----------------------------------|--------------------------------|--------------|
| Southwest Texas State University | Assistant Professor | 2001-Present |
| Missouri Baptist College | Associate Professor | 1999-2001 |
| Amcol International, Inc. | Vice President/ Tech. Director | 1992-1999 |
| Technical Minerals Inc. | Vice President of Technical | 1987-1992 |
| United Catalysts Inc. | Technical Director | 1984-1987 |
| Weston, Inc. | Manager of Geosciences | 1983-1984 |
| Radian Corp. | Senior Scientist | 1979-1983 |
| Oak Ridge National Laboratory | Staff Research Scientist | 1977-1979 |
| Baylor University | Welch Post-doctoral Fellow | 1975-1977 |

Courses Taught

General Chemistry I&II, Organic Chemistry I&II, Quantitative Analysis, Instrumental Analysis, **Physical Chemistry I&II**, **Advanced Inorganic**, Molecular Modeling, Introduction to Polymers, Industrial Chemistry, College Algebra, **Physical Chemistry for Biochemist**, **Graduate Physical Chemistry**

Courses Prepared

Molecular Modeling, Instrumental Analysis, **Physical Chemistry for Biochemist**, Industrial Chemistry, **Introduction to Polymers**, **Polymer Processing and Characterization**, and **Physical Chemistry of Polymers**

Organizations

Honorary: Sigma Xi

Professional: American Chemical Society, Materials Research Society, Society of Plastics Engineers, Clay Mineral Society

Service

University: **Co-PI for The Bridges Program**
Departmental: **Sponsor of Chemistry Club,
Summer Internship Program Organizer**

Community: 4H geology club sponsor, Mayor of Fairfield, KY, Board of Directors for Northwest Suburban Christian School

II. SCHOLARLY/CREATIVE

Books

Edited Books

Polymer-Clay Nanocomposites, Wiley Series in Polymer Science, John Wiley & Sons, Chichester, England (2000) Edited by T. J. Pinnavaia and G. W. Beall

Book Chapters

Of chapters in four books the most recent include:

1. G. W. Beall, "New Conceptual Model for Interpreting Nanocomposite Behavior", *Polymer-Clay Nanocomposites*, Wiley Series in Polymer Science, John Wiley & Sons, Chichester, England (2000) Edited by T. J. Pinnavaia and G. W. Beall
2. G. W. Beall and S. J. Tsipursky "Nanocomposites Produced Utilizing a Novel Ion-Dipole Clay Surface Modification", *Chemistry and Technology of Polymer Additives*, Blackwell Science Ltd, Oxford, UK, (1999) Edited by S. Al- Malaika, A. Golovoy, and C. A. Wilkie

Articles

Peered Reviewed Papers

1. **Gary W. Beall "The Use of Organoclays in Wastewater Treatment" accepted for publication in Applied Clay Science**

Proceedings

1. Gary W. Beall "Tailoring of Inorganic Surface Modified Nanoparticles for Nanocomposites" Proceedings of Nanocomposites 2000 November 6-7, 2000, Brussels, Belgium, To be included as chapter in book to be published
2. Gary W. Beall "nanocomposites a New Frontier in Material Science" Proceedings of Euroclay '99, September 5-9, Krakow, Poland (1999)

3. Gary W. Beall "Molecular Modeling of Nanocomposite Systems" Proceedings of Antec '99, May 2-6, New York, NY (1999)
4. Gary W. Beall and Karl Kamena "A New Family of Intercalated Clays for Clay/polymer Nanocomposites" Proc. of Antec '99, May 2-6, New York, NY (1999)
5. Tie Lan, Y. Liang, G. W. Beall and Karl Kamena "Advances in Nanomer Additives for Clay/Polymer Nanocomposites", Proc. of Additives '99, March 22-24, San Francisco, CA (1999)
6. A. Goldman, J. A. Montes, A. Barajas, G. Beall, and D. D. Eisenhour. "Effect of aging on mineral-filled nanocomposites", Annu. Tech. Conf. – Soc. Plast. Eng. (1998), 56th(Vol. 2), 2415-2425.
7. Gary W. Beall. "Factors Affecting the Ultimate Properties of Clay/Polymer Nanocomposites", *Proc. of Wasedo Workshop on Clay - Polymer Nanocomposites*, Tokyo, Japan. 7 Sept., (1998).
8. Jarrod Massom, Zhen Wang, Thomas J. Pinnavaia, Tie Lan, and Gary W. Beall. "Clay Nanolayer Reinforcement in Epoxy-Clay Nanocomposites: A Comparison of Chemical and Laboratory Purified Clays." *The 215th ACS Meeting*, Dallas, TX. 29 March - 2 April, (1998).
9. Gary W. Beall and S. J. Tsipursky. "Nanocomposites Produced Utilizing a Novel Clay Surface Modification." *Proc. of Additives '98*, Orlando, FL. 16 - 18 Feb., (1998).
10. Gary W. Beall. "New High Clarity Gas Barrier Films Using Nano-Composite Technology." *Flex-Pak '96*, Proc. Worldwide Flexible Packaging Conf. 2nd (1996).

Patents Of a total of 41 patents the following are the most recent:

1. **US Patent # 6,461,42 Issued: Oct. 8, 2002**
" Intercalates and exfoliates formed with hydroxyl-functional; polyhydroxyl-functional; and aromatic compounds; composite materials containing same and methods of modifying rheology therewith"
Inventors: Gary W. Beall, Semeon Tsipursky, Anatoliy Sorokin, and Anatoliy Goldman
2. **US Patent # 6,287,634 Issued: Sept. 11, 2001**
" Intercalates and exfoliates formed with monomeric ethers and esters; composite materials containing same methods of modifying rheology therewith"
Inventors: Gary W. Beall, Semeon J. Tsipursky, Anatoliy Sorokin, and Anatoliy Goldman

3. US Patent # 6,242,500 Issued: June 5, 2001
“ Intercalates and exfoliates formed with long chain (C6+) or aromatic matrix polymer-compatible monomeric, oligomeric or polymeric intercalant compounds, and composite materials containing same”
Inventors: Tie Lan, Ying Liang, Semeon Tsipursky, and Gary W. Beall
4. US Patent # 6,235,533 Issued: May 22, 2001
“ Method of determining the composition of clay deposit”
Inventors: Semeon J. Tsipursky, Don D. Eisenhour, Gary W. Beall, Mark Clarey, and James Edwards
5. US Patent # 6,228,903 Issued: May 8, 2001
“ Exfoliated layered materials and nanocomposites comprising said exfoliated layered materials having water-insoluble oligomers or polymers adhered thereto”
Inventors: Gary W. Beall, Fernando Serrano, and Hannah Cruz
6. US Patent # 6,126,734
Issued: October 3, 2000
“ Intercalates and exfoliates formed with hydroxyl-functional; polyhydroxyl-functional; and aromatic compounds; composite materials containing same and methods of modifying rheology therewith”
Inventors: Gary W. Beall, Semeon Tsipursky, Anatoliy Sorokin, and Anatoliy Goldman
7. US Patent # 6,124,365
Issued: September 26, 2000
“ Intercalates and exfoliates formed with long chain (C6+) or aromatic matrix polymer-compatible monomeric, oligomeric or polymeric intercalant compounds and composite materials containing same”
Inventors: Tie Lan, Ying Liang, Semeon Tsipursky, and Gary W. Beall
8. US Patent # 6,090,734
Issued: July 18, 2000
“ Process for the hydrothermal conversion of silica impurities to a dioctahedral or trioctahedral smectite clay”
Inventors: Semeon Tsipursky, Don D. Eisenhour, Gary W. Beall, and Marek R. Mosiewicz
9. US Patent # 6,083,559
Issued: July 4, 2000
“ Intercalates and exfoliates formed with hydroxyl-functional; polyhydroxyl-functional; and aromatic compounds; composite materials containing same and methods of modifying rheology therewith”
Inventors: Gary W. Beall, Semeon Tsipursky, Anatoliy Sorokin, and Anatoliy Goldman

10. US Patent # 6,057,396
 Issued: May 2, 2000
 “ Intercalates formed by co-intercalation of monomer, oligomer or polymer intercalants and surface modifier intercalants and layered materials and nanocomposites prepared with the intercalates”
 Inventors: Tie Lan, Gary W. Beall, and Semeon Tsipursky
11. US Patent # 6,050,509
 Issued: April 18, 2000
 “ Method of manufacturing polymer-grade clay for use in nanocomposites”
 Inventors: Mark Clarey, James Edwards, Semeon J. Tsipursky, Gary W. Beall, and Don D. Eisenhour

Grants

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|---|-----------------|
| 1. “ Coatings for Helicopter Rotors” US Navy (2003) | \$8,000 |
| 2. “Application of Nanocomposite Technology to Golf Clubs” Callaway Golf Co. (2003) | \$19,800 |
| 3. “Studies of Polymer/Clay Nanocomposites” Southern Clay Products(2003) | \$10,000 |
| 4. “Ablative Materials for Ramjet Combustion Chambers” US Navy(2002) | \$29,000 |
| 5. “ Study of GRAS materials in Nanocomposites” Cryovac (2002) | \$22,000 |
| 6. “Study of Ethyl Lactate as an Oxygenate Additive for Gasoline” Cargill Dow LLC (2002) | \$2,000 |
| 7. “ Nanoparticle Hydrotalcites for Consumer Products” Proctor & Gamble Co.(2002) | \$8,000 |
| 8. “Synthesis and Characterization of Organo-Hydrotalcites as Nanophase Filler in Elastomeric Systems” Michelin America (2002) | \$25,000 |
| 9. “ Studies of Polymer/Clay Nanocomposites” Southern Clay Products (2002) | \$10,000 |
| 10. “Molecular Modeling of Nanocomposites” ITRI, Taiwan (2001) | \$15,000 |
| 11. “ Optimization of surface Modifiers for Use as Nanocomposites in Elastomeric Systems” Michelin America (2001) | \$15,000 |
| 12. “Development of Second Generation Crudesorb” Colloid Environmental Co. (2001) | \$15,000 |
| 13. “Polylactic Acid Nanocomposites” Cargill Dow LLC (2001) | \$15,000 |
| 14. “ Studies of Polymer/Clay Nanocomposites” Southern Clay Products (2001) | \$10,000 |
| 15. “ Studies of Polymer/Clay Nanocomposites” Southern Clay Products(2000) | \$10,000 |

Honors

Distinguished Alumnus Award (1997) Tarleton State University

III . SCHOLARLY ACTIVITIES

Papers Presented at Professional Meetings

1. **Gary W. Beall, Marcus Goss, and Elizabeth Peterson, “The Role of the Nano- Particle/Polymer Interface in Nanocomposites” American Chemical Society, Division of Polymer Chemistry, @002 POLY Biennial Symposium/Polymeric Nanocomposites, Nov. 17-20,2002, Sonoma, Ca.**
2. Gary W. Beall “nanocomposites a New Frontier in Material Science” Euroclay '99, September 5-9, Krakow, Poland (1999)
3. Gary W. Beall “Molecular Modeling of Nanocomposite Systems” Antec'99, May 2-6, New York, NY (1999)
4. Gary W. Beall and Karl Kamena “ A New Family of Intercalated Clays for Clay/polymer Nanocomposites” Antec '99, May 2-6, New York, NY (1999)
5. Tie Lan, Y. Liang, G. W. Beall and Karl Kamena “Advances in Nanomer Additives for Clay/Polymer Nanocomposites”, Additives 99', March 22-24, San Francisco, CA(1999)
6. A. Goldman, J. A. Montes, A. Barajas, G. Beall, and D. D. Eisenhour. “Effect of aging on mineral-filled nanocomposites” , Annu. Tech. Conf. – Soc. Plast. Eng. (1998), 56th(Vol. 2), 2415-2425.
7. Jarrod Massom, Zhen Wang, Thomas J. Pinnavaia, Tie Lan, and Gary W. Beall. "Clay Nanolayer Reinforcement in Epoxy-Clay Nanocomposites: A Comparison of Chemical and Laboratory Purified Clays." *The 215th ACS Meeting*, Dallas, TX. 29 March - 2 April, (1998).
8. Gary W. Beall and S. J. Tsipursky. "Nanocomposites Produced Utilizing a Novel Clay Surface Modification." *Additives '98*, Orlando, FL. 16 - 18 Feb., (1998).
9. Gary W. Beall. "New High Clarity Gas Barrier Films Using Nano-Composite Technology." *Flex-Pak '96*, Worldwide Flexible Packaging Conf. 2nd (1996).

Invited Talks, Lectures

1. **Gary W. Beall “ Potential Uses for Nanoparticles in Biological Systems” Nano-Vivo Summit, Houston, Tx., Aug. 1, 2002**
2. **Gary W. Beall “Where the Action Is: The Nano-Particle Interface” (Invited), Oct. 17, 2002, Air Force Research Laboratory, Wright Patterson Air Force Base, Dayton, OH.**
3. **Gary W. Beall “ Nanocomposite Research at Southwest Texas State and a Commercial Perspective” Nanotechnology Colloquium, Sept. 30, 2002, Austin,**

TX

4. Gary W. Beall “Treating Nanoclays to Compatibilise Them with a Broader Range of Polymers” Nanocomposites 2002, Jan. 28-29,2002, Amsterdam, The Netherlands
5. Gary W. Beall “Recent Advances in Nanocomposite Technology” and “Molecular Modeling of Nanocomposite Behavior” Symposium held at the Industrial Technology Research Institute, October 24, 2001 Hsinchu, Taiwan
6. Gary W. Beall “Molecular Modeling of Nanocomposites” Accelrys meeting on computational chemistry in nanophase materials October 18, 2001, San Jose, CA.
7. Gary W. Beall “ Tailoring of Inorganic Surface Modified Nanoparticles for Nanocomposites” Nanocomposites 2000 November 6-7, 2000, Brussels, Belgium
8. Gary W. Beall. "Factors Affecting the Ultimate Properties of Clay/Polymer Nanocomposites", *Proc. of Wasedo Workshop on Clay - Polymer Nanocomposites* Tokyo, Japan. 7 Sept., (1998).

Consultancies

NATO Science For Peace Program 2002-present
Procter & Gamble Co. 2001-Present
Marine Environmental Protection Inc. 2002-Present
Michelin America 1999- present
Cargill Dow LLC 1999-present
Industrial Technology Research Institute, Taiwan 2000-present
Eastman Kodak 1999-present
Cryovac 2001-present
Southern Clay Products 1999-present
McAndrews, Held, and Malloy 1999-present
Colloid Environmental Company 2001
Ferro Corporation 1999-2000
Albemarle 1999

Symposia

1. Organizer of symposium on “ Nanocomposites”, ANTEC, Society of Plastic Engineers, held in San Francisco, CA. May (2002)
2. Organizer of symposium on “ Nanocomposites” , Materials Research Society, held in San Francisco, CA. April (2002)
3. Organizer of symposium on “ Non-conventional fillers for rubber”, ACS Rubber Division meeting, held in Savannah, GA Feb. (2002)
4. Organizer of meeting on “Nanocomposites 2001” held in Baltimore, MD June (2001)

5. Organizer of a symposium on “Advances and Applications of Nanocomposites” for Additives 2001 held in Hilton Head, SC March (2001)
6. Organizer of a symposium on “Advances and Applications of Nanocomposites” For Additives 2000 held in Clearwater, FL March (2000)
7. Organizer of a symposium on “Advances and Applications of Nanocomposites” for Additives 99 held in San Francisco, CA March (1999)

Editorial Boards

Editorial board of the Journal of Clay Science 1999-present