

CURRICULUM VITAE OF ANN M. VIANO

Ann M. Viano
Department of Physics
Rhodes College
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Citizenship: USA

EDUCATION

Washington University, St. Louis, Missouri (1990-1996)

Ph.D. in Physics, April 1996

Dissertation Title: "Formation of Ti-based Quasicrystalline Hydrides and the Characterization of Semiconductor Nanoparticles"

M.S. in Physics, May 1994

Santa Clara University, Santa Clara, California (1986-1990)

B.S. in Engineering Physics, June 1990

EMPLOYMENT HISTORY

- Rhodes College, Memphis, Tennessee
 - Faculty Fellow for Undergraduate Research, 2008 – present
 - J. Lester Crain Professor of Physics, September 2006 - present
 - Associate Professor of Physics, March 2005 - present
 - Assistant Professor of Physics, Aug. 1999 - March 2005
- Adjunct Professor of Biomedical Engineering, the University of Memphis, 2005-present
- Postdoctoral Researcher, Department of Diagnostic Imaging, St. Jude Children's Research Hospital, Memphis, Tennessee 1997-1999
- Adjunct Professor of Physics, the University of Memphis, Memphis, Tennessee, 1996-1997
- Graduate Research Assistant, Washington University, St. Louis, Missouri, 1990-1996
- Research Assistant, Xerox Palo Alto Research Center, Palo Alto, California, 1989-1990

PROFESSIONAL SOCIETY MEMBERSHIPS

- Sigma Pi Sigma (national president, 2006-present)
- The American Association of Physics Teachers
- The American Physical Society
- The Materials Research Society
- Society for Biomaterials

ADMINISTRATIVE EXPERIENCE

Faculty Fellow for Undergraduate Research

2008-present

direct and coordinate all undergraduate research programs, evaluate proposals for and administer Rhodes student research assistant program, chair planning committee for Undergraduate Research and Creative Activity Symposium, Rhodes liaison to Council on Undergraduate Research

TEACHING EXPERIENCE

Rhodes College

Courses taught:

Upper Level Physics courses for physics majors:

Electronics with lab*

Dynamics†

Advanced Dynamics†

Quantum Physics

Modern Physics

Physics Senior Seminar†

Courses beyond the physics major curriculum:

Astronomy† and Astronomy Laboratory†

Robotics*- interdisciplinary course between physics and art

Fundamentals of Physics Laboratory

Interdisciplinary Senior Seminar: *Cancer Research and Treatment**

* indicates new courses developed

† indicates major pedagogical changes implemented

Directed inquiry projects:

Fall 2006, Spring 2007: Danielle Mueller, "Biocorrosion of Implant Alloys"

Fall 2003: Dustin Diez, "Implementation of MMLC in IMRT"

Spring 2002: John A. Sexton, "Functional MRI of the Brain"

Spring 2002: Mark J. Loeffler, "Electronic Instrumentation"

Spring 2000: Bambi J. Roberts, "Measuring the Height of Lunar Features"

Fall 2000: Ben Evans "Analysis of TEM Images of UHMWPE to determine crystalline density and lamellar orientation"

Senior honors projects:

2006-2007: M. A. Scott, "Fluid absorption in UHMWPE"

2003-2004 : John A. Sexton, "Functional MRI of the Brain"

The University of Memphis

Courses taught: Introductory Physics, General Astronomy

SERVICE

College Committees

Space Planning Committee	August 2006 - present
Rhodes – St. Jude partnership committee	2000 - present
Faculty Trustee	2007-present
Academic Advisor	1999 - present
Pre-Engineering Advisor	2006-present
Faculty Professional Interest Committee	May 2006 – August 2007
Post Graduate Scholarship Committee	Jan. - May 2003
Faculty Development Committee	2000 - 2003
Bellingrath-Hyde scholarship committee	2000, 2002 – 2004
Watson Fellowship Interview committee	2007
Faculty Search Committees:	
Physics	2001, '02, '04, '05, '06
Mathematics and Computer Science	2002, 2008
Biology	2001
Chemistry	2001

Other

Taylor Fellowship in Physics selection committee (chair)	2006 – present
Sigma Pi Sigma chapter advisor	1999 – present
Society of Physics Students Chapter Advisor	2002 - 2003
Volunteer for <i>Engineering World Health</i>	
Judge, Shelby County Science Fair	
Coordinator for Rhodes astronomy outreach programs	
Guest lecturer for Rhodes' NSF-funded Summer Scholars program	

PROFESSIONAL DEVELOPMENT ACTIVITIES

- President, Sigma Pi Sigma (the physics honor society); includes membership on educational advisory committee for the American Institute of Physics, executive committee for the Society of Physics Students, liaison to Association of College Honor Societies, 2006 - present
- Invited reviewer for the *American Journal of Physics*, 2006
- Invited grant reviewer for U.S. Civilian Research and Development Foundation, 2004
- Invited grant reviewer for Petroleum Research Foundation, 2004
- Invited reviewer for the *Journal of Noncrystalline Solids*, 2004
- Society of Physics Students National Council member and Zone 10 Councilor, 2000 - 2003
- Invited session chair at the International Conference on Composite Engineering, 2002
- Attended new faculty workshop sponsored by the American Physical Society, 2000
- Attended teaching and learning workshop sponsored by the Associated Colleges of the South, 2000
- Participated in Chautaugua course "Promoting Active Learning in Introductory Physics", 1999

GRANTS

- Co-PI for NSF-IMR grant "Acquisition of a Modern Vibrating Sample Magnetometer - Integrating Materials Science Research and Education in the Mid-South", 2008 (\$251,000- pending)
- Co-PI for NSF-MRI grant "Acquisition of a Modern Vibrating Sample Magnetometer - Bringing hands-on learning to materials science education in the mid-south", 2007 (declined)
- Petroleum Research Foundation SRF (summer research fellowship) "Ferro-Antiferromagnetic exchange coupled nanocomposites", 2006 (\$8000)
- Co-contributor and defense presenter for DOE EPSCoR grant "TN Consortium of Nano-structured Materials for Efficient Power Applications", June 2005 (not funded).
- Faculty Development Endowment Grant, Rhodes College, 2002 (\$8600)
- Hill Grant for curricular development, Rhodes College, 2002 (\$7600)
- Merck-AAAS Undergraduate Science Research Program award, 2002 (\$60,000)
- Faculty Development Endowment Grant, Rhodes College, 2000 (\$5691)
- Co-contributor for NSF Major Research Instrumentation Program, 2000 (\$500,000)
- Co-PI for NSF renewal grant: "Research Experience for Undergraduates in Bioengineering and Biosurfaces", with the University of Memphis Biomedical Engineering Department, 1999 (\$682,000)

SUPERVISED STUDENT RESEARCH

Julie Auwarter (2000) determined how the addition of the mineral hydroxyapatite to commercial bone cement affected the curing process of this material. She presented this work at a regional conference, the Rhodes undergraduate research symposium, and co-authored a refereed publication.

Ben Evans (2000) developed a technique to visualize the molecular morphology of ultra-high molecular weight polyethylene using transmission electron microscopy. He presented this work at two regional scientific meetings, and won a prize for his presentation at the Rhodes Undergraduate Research Symposium.

Lauren Glas (2000) refurbished a radio-frequency generator for the melt-processing of metallic materials. She created a web-based presentation of this project.

Neil Fore (2001) investigated differences in lamellar thickness using transmission electron microscopy of ultra-high molecular weight polyethylene as a function of sterilization method. He presented this work at three regional conferences, including the Rhodes Undergraduate Research Symposium, and co-authored a refereed publication.

Devesh Amaty (2001) visualized morphological differences between surface and bulk regions of an ultra-high molecular weight polyethylene acetabular cup using transmission electron microscopy. He summarized his project in a final presentation for the Research Experience for Undergraduates in Biomedical Engineering Program at the University of Memphis.

Karyn Spence (2002) used TEM to study the effects of annealing and aging on the morphology of ultra-high molecular weight polyethylene. She presented her work at two national meetings, including selection to present at the American Association for the Advancement of Sciences (AAAS) national meeting. She was awarded a prize for best presentation at the Rhodes Undergraduate Research and Creative Activity Symposium. She is a co-author on a publication currently in preparation.

Sean McKenna (2002) studied the thermal and structural properties of copper-oxide based nanocomposite materials using differential thermal analysis and transmission electron microscopy.

Matthew Shanks (2003) used TEM to study the effects of annealing and aging on the morphology of ultra-high molecular weight polyethylene, and performed analysis and manipulation of chemical pyrolysis data acquired from this material. He presented this work at the national meeting of the National Council for Undergraduate Research.

Drew Scott (2004, 2005, 2006) measured the amount of lamellar stacking in ultra-high molecular weight polyethylene. He is a co-author on a publication currently in preparation.

Danielle Mueller (2006-2007) investigated corrosion properties of medical grade titanium as a function of attached macrophage cell activity.

Justin Hugon (2007) fabricated polyethylene wear particles from a joint simulator and compared particle morphology and quantity as a function of joint material.

Claire Delbove (2008) extraction and microscopic characterization of nanometer-sized UHMWPE wear particles

Rob Jaslow (2008) mechanical testing of UHMWPE as a function of fluid absorption and load

REFEREED PUBLICATIONS (Rhodes students in boldface)

1. B.K. Hoffmeister, **D.P. Johnson, J.A. Janeski, D.A. Keedy, B.W. Steinert**, A.M. Viano and S.C. Kaste, "Ultrasonic characterization of human cancellous bone in vitro using three different apparent backscatter parameters in the frequency range 0.6-15.0 MHz," IEEE Transactions on Ultrasonic Ferroelectrics and frequency Control, in press (2008).
2. Betsy M. Chesnutt, Ann M. Viano, Youling Yuan, Yunzhi Yang, Joo L. Ong, Warren O. Haggard, and Joel D. Bumgardner, "Design and Characterization of a Novel Chitosan/ Nanocrystalline Calcium Phosphate Composite Scaffold for Bone Regeneration", J. Biomedical Materials Research A, 10.1002/jbm.a.31878, published online February 2008.
3. **M. Andrew Scott**, Ann M. Viano, Sanjay R. Mishra, Warren O. Haggard, "Effect of biological fluid absorption on the lamellar structure of UHMWPE", Transactions of the Orthopaedic Research Society, 33, 1675 (2008).
4. AM Viano, **KE Spence, MA Shanks, MA Scott**, RD Redfearn, **CW Carlson, TA Holm**, AK Ray, "Chemical and structural changes due to annealing in radiation-induced crosslinked ultra-high-molecular-weight polyethylene", Biomedical Materials and Engineering 17(5), 257-268 (2007).
5. SR Mishra, K. Ghosh, J. Losby, T. Kehl, and A. Viano "Magnetotransport Properties of Compression Molded CrO₂-Polyimide Composite" in *Organic/Inorganic Hybrid Materials—2004*, edited by Clément Sanchez, Ulrich Schubert, Richard M. Laine, and Yoshiki Chujo (Mater. Res. Soc. Symp. Proc. 847, Warrendale, PA, 2005), EE13.23.
6. RD Redfearn, **CW Carlson**, AM Viano, **KE Spence**, and AK Ray "Pyrolysis GC-MS and transmission electron microscopy in the characterization of crosslinked UHMWPE microstructure" Polymer Preprints 44 (1), 158 (2003).
7. A Viano, S Mishra, R. Lloyd, J. Losby, T. Gheyi, "Thermal effects on ESR signal evolution in nano and bulk CuO powder", Journal of Noncrystalline Solids 325, 16-21 (2003).
8. SR Mishra, AM Viano, S Roy, N Ali, J Losby, "Magnetic Properties of Iron Nitride-Silica Nanocomposite Materials Prepared By High-Energy Ball Milling", Journal of Nanoscience and Nanotechnology 3 (3), 227-230 (2003).
9. SR Mishra, GJ Long, F Grandjean, RP Hermann, S Roy, N Ali, AM Viano, "Magnetic Properties of Iron Nitride-Alumina Nanocomposite Materials prepared by High-Energy Ball Milling", European Physical Journal D 24(1-3), 93-96 (2003).
10. S Mishra, A Viano, **N Fore**, G Lewis, A Ray, "Influence of lamella features of UHMWPE on its physical and uniaxial tensile properties. I. Effect of sterilization method in uncrosslinked an unaged materials", Biomedical Materials and Engineering 13, 135-146 (2003).
11. AM Viano, SR Mishra, "Thermal and Structural Characterization of Nanocomposite Iron Nitride-Alumina and Iron Nitride-Silica Particles", Proceedings of the Materials Research Society (fall 2001), eds. S Komarneni, RA Vaia, GQ Lu, J-I Matsushita, JC Parker, 703, V9.16.1-V9.16.6 (2002).
12. AM Viano, **JA Auwarter**, JY Rho, BK Hoffmeister, "Ultrasonic Characterization of the Curing Process of Hydroxyapatite modified Bone Cement," Journal of Biomedical Materials Research 56, 593-599 (2001).
13. AM Viano, SA Gronemeyer, M Haliloglu, FA Hoffer, "Improved MR Imaging for Patients with Metallic Implants," Magnetic Resonance Imaging 18 (3), 287-295 (2000).

14. AM Viano, EH Majzoub, RM Stroud, MJ Kramer, ST Mixture, PC Gibbons and KF Kelton, "Hydrogen Absorption and Storage in Quasicrystalline and Related TiZrNi Alloys," *Philosophical Magazine A* 78 (1), 131-141 (1998).
15. KF Kelton, JY Kim, EH Majzoub, PC Gibbons, AM Viano and RM Stroud, "Hydrogen Storage in a Stable Ti-Quasicrystal," in *Proc. Sixth International Conf. Quasicrystals*, edited by S. Takeuchi and T. Fujiwara (World Scientific, New Jersey, 1998), pp. 261-268.
16. TJ Trentler, SC Goel, KM Hickman, AM Viano, MY Chiang, AM Beatty, PC Gibbons and WE Buhro, "Solution-Liquid-Solid Growth of Indium Phosphide Fibers from Organometallic Precursors; Elucidation of Molecular and Nonmolecular Components of the Pathway," *Journal of the American Chemical Society*. 119 (9), 2172-2181 (1997).
17. G Coddens, AM Viano, PC Gibbons, KF Kelton and MJ Kramer, "Time-of-Flight Neutron Scattering Study of Hydrogen Dynamics in Icosahedral $Ti_{45}Zr_{38}Ni_{17}H_{150}$ Quasicrystals," *Solid State Communications* 104 (3), 179-182 (1997).
18. RM Stroud, AM Viano, EH Majzoub, PC Gibbons and KF Kelton, "Stable Ti-Based Quasicrystals Offer Prospect for Improved Hydrogen Storage," *Applied Physics Letters* 69, 2998-3000 (1996).
19. RM Stroud, AM Viano, EH Majzoub, PC Gibbons and KF Kelton, "Ti-Zr-Ni Quasicrystals: Structure and Hydrogen Storage," in *Metal-Based Phases and Microstructure*, edited by R. Bormann, B. Mazzone, R. D. Shull, R. S. Averback and R. F. Ziolo (Materials Research Society, Warrendale, 1996), Vol. 400, pp. 255-260.
20. AM Viano, RM Stroud, PC Gibbons, AF McDowell, MS Conradi and KF Kelton, "Hydrogenation of Titanium-Based Quasicrystals," *Physical Review B* 51, 12026-12029 (1995).
21. AM Viano, AF McDowell, MS Conradi, PC Gibbons and KF Kelton, "Hydrogen in Ti-Based Quasicrystals," in *Proc. Fifth International Conf. Quasicrystals*, edited by C. Janot and R. Mosseri (World Scientific, New Jersey, 1995), pp. 798-801.
22. TJ Trentler, KM Hickman, SC Goel, AM Viano, PC Gibbons and WE Buhro, "Solution-Liquid-Solid Growth of Crystalline III-V Semiconductors; An Analogy to Vapor-Liquid-Solid Growth," *Science* 270, 1791-1794 (1995).
23. LE Levine, PC Gibbons and AM Viano, "Atomic Structures of Ti-Based Decagonal Approximate Phases," *Philosophical Magazine B* 70, 11-32 (1994).
24. AM Viano, PC Gibbons, WE Buhro, SC Goel and MA Matchett, "Structural Characterization of Phosphide and Related Semiconductor Nanoclusters," *Nanostructured Materials* 3, 239-244 (1992).
25. MA Matchett, AM Viano, NL Adolphi, RD Stoddard, WE Buhro, MS Conradi and PC Gibbons, "A Sol-Gel-Like Route to Crystalline Cadmium Phosphide Nanoclusters," *Chemistry of Materials* 4, 508-511 (1992).
26. DB Fenner, AM Viano, DK Fork, GAN Connell, JB Boyce, FA Ponce and JC Tramontana, "Reactions at the Interfaces of Thin Films of Y-Ba-Cu- and Zr- Oxides with Si Substrates," *Journal of Applied Physics* 69, 2176 (1991).
27. DB Fenner, DK Fork, GAN Connell, JB Boyce, AM Viano and TH Geballe, "High Critical Currents in Y-Ba-Cu-O Films on Silicon Using YSZ Buffer Layers," *IEEE Transactions on Magnetics* 27, 958-965 (1991).
28. DK Fork, A Barrera, TH Geballe, AM Viano and DB Fenner, "Reaction Patterning of $YBa_2Cu_3O_{7-\delta}$ Thin Films on Si," *Applied Physics Letters* 57, 2504-2506 (1990).
29. DB Fenner, DK Fork, GAN Connell, JB Boyce, FA Ponce, JC Tramontana, AM Viano and TH Geballe, "Heteroepitaxial Metal Oxides on Silicon by Laser Ablation," *Materials Research Society Symposium Proceedings* 191, 187-192 (1990).
30. JB Boyce, GAN Connell, DK Fork, DB Fenner, K Char, FA Ponce, F Bridges, JC Tramontana, AM Viano, SS Laderman, RC Taber, S. Tahara, and TH Geballe, "In-Situ Growth of Superconducting $YBa_2Cu_3O_d$ Films by Pulsed Laser Deposition," *Proceedings of the International Society for Optical Engineering (SPIE)* 1187, 136-147 (1990).
31. DB Fenner, AM Viano, GAN Connell, JB Boyce, DK Fork, FA Ponce and JC Tramontana, "XPS Analysis of Y-Ba-Cu-O and Zr-O Thin Films and Interfaces with Silicon Substrates," *Materials Research Society Symposium Proceedings* 169, 1005-1008 (1989).
32. DB Fenner, DK Fork, JB Boyce, GAN Connell and AM Viano, "Deposition and Characterization of Y-Ba-Cu-O Thin Films on Silicon Substrates: Interface Analysis," *Physica C- Superconductivity* 162-164, 141-142 (1989).

CONFERENCE PRESENTATIONS (Rhodes students in bold)

Oral Presentations

1. B.M. Chesnutt, Y. Yuan, S. Oh, Y. Yang, A.M. Viano, J.L. Ong, W.O. Haggard, J.D. Bumgardner. "Characterization of chitosan / nanocrystalline hydroxyapatite composite scaffolds for bone tissue engineering.", Society for Biomaterials Annual Meeting, Pittsburgh, PA, April 2006.
2. B.K. Hoffmeister, **D.P. Johnson, J.A. Janeski, D.A. Keedy, B.W. Steinert**, A.M. Viano and S.C. Kaste. "Ultrasonic Characterization of Cancellous Bone Using Apparent Integrated Backscatter," 31st International Symposium on Ultrasonic Imaging and Tissue Characterization, Arlington, VA, May 2006
3. Richard D. Redfearn, **Terese Holm, Carl W. Carlson**, Ann M. Viano, **Karyn E. Spence, Matt Shanks, Mark Andrew Scott**, and Asit K. Ray, "Pyrolysis GC-MS and transmission electron microscopy used to characterize annealing effects in UHMWPE", American Chemical Society Fall 2005 meeting
4. A.M. Viano, **M.A. Scott, T. Holm**, R.D. Redfearn, **M.A. Shanks, K.E. Spence, C.W. Carlson**, A.K. Ray, "A Microscopic Understanding Of Bonding And Structure In Ultra-high molecular-weight-polyethylene" Society for Biomaterials Annual Meeting, Memphis TN, April 2005.
5. SR Mishra, K Ghosh, J Losby, T Kehl, A Viano, "Half-Metal-Polymer Magnetoresistive Composite" International Magnetics Conference, Nagoya Japan, April 2005
6. SR Mishra, K. Ghosh, J. Losby, T. Kehl, and A. Viano "Magnetotransport Properties of Compression Molded CrO₂-Polyimide Composite" Fall meeting of the Materials Research Society, Boston MA, November 2004.
7. SR Mishra, GJ Long, F Grandjean, RP Hermann, S Roy, N Ali, AM Viano, "Magnetic Properties of Iron Nitride-Alumina Nanocomposite Materials prepared by High-Energy Ball Milling", Interdisciplinary Conference on the Science of Nanoparticles and Nanosystems, Strasbourg, France, September 10, 2002.
8. AM Viano, SR Mishra, "Thermal and Structural Studies of Copper-Based Nanoparticles produced by Sol-gel Processing", invited talk for the International Conference on Composite Engineering, San Diego, July 1-6, 2002.
9. SR Mishra, J Losby, R Lloyd, T Ghai, A Viano, "An ESR Study of Antiferromagnetism Ordering in Bulk to Nanoscale CuO Powder", invited talk for the International Conference on Composite Engineering, San Diego, July 1-6, 2002.
10. AM Viano, **JA Auwarter**, JY Rho, BK Hoffmeister, "Ultrasonic Characterization of PMMA Bone Cement", invited talk for the Memphis Area Engineering and Science Conference, Christian Brother's University, May 10, 2002.
11. **N Fore**, A Viano, S Mishra, G Lewis, "TEM Investigation of Stressed Ultrahigh Molecular Weight Polyethylene after Sterilization", 5th Tennessee Conference on Biomedical Engineering, St. Jude Children's Research Hospital and the University of Tennessee, 6 April 2002.
12. AM Viano, SR Mishra, "Structural Characterization of Ultra-High Molecular Weight Polyethylene for Joint Prostheses" invited talk for the Fourth Tennessee Conference on Biomedical Engineering, the University of Memphis, March 21, 2001.
13. AM Viano, **JA Auwarter**, JY Rho, BK Hoffmeister, "Ultrasonic Characterization of the Curing Process of PMMA Bone Cement", contributed talk for the March Meeting of the American Physical Society, Minneapolis MN, March 24, 2000.
14. AM Viano, S Gronemeyer, M Haliloglu, FA Hoffer, "Reduction of Metal Artifacts in Magnetic Resonance Imaging", contributed talk for the First Tennessee Conference on Biomedical Engineering, Memphis TN, April 4-6, 1998.
15. A Viano, "Quasicrystals: Structure, Stability, and Application", invited talk for the annual meeting of the American Crystallographic Association, St. Louis MO, July 19-25, 1997.
16. A Viano, PC Gibbons, KF Kelton, "Hydrogen Characteristics of Ti-Based Icosahedral Quasicrystals", contributed talk for the March Meeting of the American Physical Society. Kansas City MO, March 17-21, 1997.
17. A Viano, PC Gibbons, KF Kelton, "Hydrogen Storage in Ti-based Quasicrystals", contributed talk for the March Meeting of the American Physical Society, St. Louis MO, March 18-22, 1996.
18. A. Viano, PC Gibbons, KF Kelton, "Absorption of Hydrogen in Icosahedral TiZrNi", contributed talk for the Midwest Solid State Conference, St. Louis MO, October 1995.
19. A Viano, PC Gibbons, KF Kelton, "Arcs of Diffuse Scattering in Ti-based Quasicrystals", contributed talk for the March Meeting of the American Physical Society, Seattle WA, March 1993.
20. A Viano, PC Gibbons, WH Buhro, "Characterization of III-V Semiconductor Nanoclusters", contributed talk for the March Meeting of the American Physical Society, Indianapolis IN, March 1992.

Poster Presentations

1. **M. Andrew Scott**, Ann M. Viano, Sanjay R. Mishra, Warren O. Haggard, "Effect of biological fluid absorption on the lamellar structure of UHMWPE", Orthopaedic Research Society annual meeting, San Francisco CA, 2-4 March 2008.
2. **D.L. Mueller**, A.M. Viano, J. Bumgardner, "In Vitro Biocorrosion of Titanium by Macrophage Cells" Society for Biomaterials Annual Meeting, Chicago, 18-21 April 2007.
3. A.M. Viano, **K.E. Spence, M.A. Shanks, M.A. Scott**, R.D. Redfearn, C.W. Carlson, T.A. Holm, and A.K. Ray, "Structural and Chemical Changes in ultra-high-molecular-weight polyethylene due to gamma radiation-induced crosslinking and annealing in air", the March meeting of the American Physical Society, Baltimore MD, 13-17 March 2006.
4. A Viano, **K Spence**, A Ray, **C Carlson**, R Redfearn, "Microstructural Effects of Annealing and Sterilization on Ultra High Molecular Weight Polyethylene", Annual Meeting of the Biomedical Engineering Society, Nashville, TN, October 2-4, 2003.
5. RW Redfearn, **CW Carlson**, AM Viano, **KE Spence**, "Pyrolysis GC-MS used to characterize chemical crosslinking of UHMWPE", the 225th ACS Division of Polymer Chemistry National Meeting, New Orleans, LA, March 23-27, 2003.
6. SR Mishra, GL Long, F Grandjean, RP Hermann, S Roy, N Ali, A Viano, "Magnetic Properties of Nanocomposite Iron Nitride-Alumina using High-Energy Ball Milling", International Conference on Composite Engineering, San Diego CA, July 1-6, 2002.
7. A Viano, S Mishra, "Thermal and Structural Characterization of Nanocomposite Iron Nitride-Alumina and Iron Nitride-Silica Particles", Fall meeting of the Materials Research Society, November 28, 2001.
8. A Viano, S Mishra, "Structural Characterization of Ultra-High Molecular Weight Polyethylene", Annual meeting of the Industry / University Collaboration for Biosurfaces, the University of Memphis. February 9, 2001.
9. **Julie Auwarter**, Ann Viano, Jae Rho, Brent Hoffmeister, "Ultrasonic Characterization of Polymethylmethacrylate-based Bone Cement modified with Hydroxyapatite", 3rd Tennessee Conference on Biomedical Engineering, Knoxville TN, March 2000.
10. AM Viano, S Gronemeyer, M Haliloglu, FA Hoffer, "High Readout Bandwidth MR Imaging for Patients with Metallic Implants", Faculty and Post-Doc Poster Session. St. Jude Children's Research Hospital. Memphis, TN. November 19, 1998.
11. AM Viano, S Gronemeyer, M Haliloglu, FA Hoffer, "Improved Magnetic Resonance Imaging for Patients with Metallic Implants", Annual Meeting of the American Association for Physicists in Medicine. San Antonio TX, August 2-6, 1998.
12. AM Viano, S Gronemeyer, M Haliloglu, FA Hoffer, "Improved Magnetic Resonance Imaging for Patients with Metallic Implants", St. Jude Post-Doctoral Retreat, The Peabody Hotel, Memphis TN. April 29, 1998.
13. AM Viano, S Gronemeyer, M Haliloglu, FA Hoffer, "Magnetic Resonance Imaging of Patients with Metallic Implants" Faculty and Post-Doc Poster Session. St. Jude Children's Research Hospital. Memphis TN, November 20, 1997.
14. A Viano, PC Gibbons, KF Kelton, "Hydrogen in Quasicrystalline TiZrNi", 5th International Conference on Quasicrystals. Avignon, France, April 22-26, 1995.
15. A Viano, PC Gibbons, KF Kelton, "Absorption of H in Ti-based Quasicrystals", Midwest Solid State Conference. Kansas City, KS, October 1994.
16. A Viano, PC Gibbons, WH Buhro, "Characterization of III-V Semiconductor Nanoparticles", Midwest Solid State Conference. Champaign-Urbana IL, October 1992.

SEMINARS

1. "Characterization of Ultra-High-Molecular-Weight Polyethylene for Joint Implants", Department of Physics, Washington University, October 2006.
2. "Microscopic Investigations of Ultra-High-Molecular-Weight-Polyethylene for Human Joint Prostheses", Department of Physics, University of Memphis, March 2005.
3. "Structural Characterization of Ultra-High Molecular Weight Polyethylene for Joint Prosthesis", Department of Physics seminar, Rhodes College, March 2001.
4. "Joint Prostheses: Materials that Work Together", invited seminar for the Joint Graduate Program in Biomedical Engineering, the University of Tennessee and the University of Memphis. September 22, 2000.

5. "Biomaterials Research", invited seminar, Memphis Orthopedic Research Group. Campbell Clinic, July 11, 2000.
6. "MR Imaging for Patients with Metallic Implants", Department of Physics seminar, Rhodes College, February 12, 1999.
7. "The Physics of MRI", invited talk for physics class at Memphis Catholic High School, April, 1999.
8. "Improving MR Imaging for Patients with Metallic Implants", Smith and Nephew Orthopedic Division, Memphis TN, December 1998.
9. "Metal and MRI", Department of Physics seminar, the University of Memphis, May 1998.
10. "Metal Artifacts in MRI", invited seminar for Molecular Pharmacology Post-Doc Meeting. St. Jude Children's Research Hospital, February 1998.
11. "Quasicrystals: Freak of Nature or your next Frying Pan?" Department of Physics seminar, Rhodes College, Memphis TN, October 1997.
12. "Quasicrystals: Structure, Stability, and Application" Department of Physics seminar, the University of Memphis, April 1997.
13. "Quasicrystalline Hydrides" Department of Physics seminar, the University of Memphis, February 1996.

PRESENTATIONS BY STUDENTS AT STUDENT CONFERENCES / SESSIONS

1. "Wear Particle Production in Artificial Joint Materials", oral presentation by Justin Hugon, Rhodes Research and Creative Activity Symposium, April 25, 2008.
2. "In Vitro Biocorrosion of Titanium by Macrophage Cells", poster presentation by D. Mueller at the Rhodes Undergraduate Research and Creative Activity Symposium, April 29, 2007.
3. "A Microscopic Investigation of Treated Ultrahigh Molecular Weight Polyethylene", poster presentation by M. A. Scott at the Rhodes Undergraduate Research and Creative Activity Symposium, April 29, 2005.
4. "A Microscopic Investigation of Treated Ultrahigh Molecular Weight Polyethylene", poster presentation by M. A. Scott at the American Association for the Advancement of Science National Meeting, Washington DC, February 2005.
5. "UHMWPE: The Search for Longer Lasting Joint Replacements", oral presentation by Matt Shanks at the national meeting of the Council of Undergraduate Research, Indianapolis IN, April 15, 2004.
6. "Pyrolysis GC-MS and Transmission Electron Microscopy in the Characterization of Crosslinked UHMWPE Microstructure", poster presentation by Carl Carlson at the TN Academy of Sciences Meeting, April 3, 2004.
7. "Pyrolysis GC-MS and Transmission Electron Microscopy in the Characterization of Crosslinked UHMWPE Microstructure", poster presentation by Carl Carlson at the American Association for the Advancement of Science National Meeting, Seattle WA, February, 2004.
8. "Pyrolysis GC-MS and Transmission Electron Microscopy in the Characterization of Crosslinked UHMWPE Microstructure", poster presentation by Carl Carlson at the Rhodes Undergraduate Research and Creative Activity Symposium, April 29, 2004
9. "Effects of Annealing on the Lamellar Structure of UHMWPE", oral presentation by Karyn Spence at the Rhodes Undergraduate Research and Creative Activities Symposium, April 29, 2003.
10. "Characterization of Cross-linked Ultrahigh Molecular Weight Polyethylene", invited poster presentation by Karyn Spence at the national meeting of the American Association for the Advancement of Science, Denver CO, February 13-17, 2003.
11. "Effects of Annealing on the Lamellar Structure of UMWPE", oral presentation by Karyn Spence at the national meeting of the American Association of Physics Teachers, Austin TX, January 13, 2003.
12. "TEM Investigation of Ultrahigh Molecular Weight Polyethylene", oral presentation by Neil Fore at the Rhodes Undergraduate Research and Creative Activities Symposium, April 27, 2002.
13. "Response of 4150HP-Grade Ultrahigh Molecular Weight Polyethylene to Stress after Sterilization", oral presentation by Neil Fore at a regional meeting of the American Association of Physics Teachers, The University of Arkansas at Fayetteville, October 2001.
14. "Changes in Physical Properties and Lamella Features of UHMWPE Induced by Uniaxial Tensile Load", oral presentation by Neil Fore at the Research Experience for Undergraduates Symposium, The University of Memphis, August 2001.

15. "Lamellar Alignment of Ultra High Molecular Weight Polyethylene in an Acetabular Cup for Total Hip Replacement", oral presentation by Devesh Amatya at the Research Experience for Undergraduates Symposium, The University of Memphis, August 2001.
16. "Characterization of Medical Grade Ultra-High Molecular Weight Polyethylene by Transmission Electron Microscopy and Atomic Force Microscopy", oral presentation by Ben Evans at the Rhodes Undergraduate Research Symposium, April 20, 2001.
17. "Structural Characterization of Ultra-High Molecular Weight Polyethylene for Joint Prostheses", oral presentation by Ben Evans at the Tennessee Academy of Sciences Meeting, The University of Memphis. March 21, 2001.
18. "Ultrasonic Characterization of Polymethylmethacrylate-based Bone Cement modified with Hydroxyapatite", poster presentation by Julie Auwarter at the Rhodes Undergraduate Research Symposium, April 28, 2000.