

AL SACCO, JR.
Dean Whitacre College of Engineering
Texas Tech University
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EDUCATION

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| Degrees: | Ph.D. | Massachusetts Institute of Technology |
| | B.S. | Northeastern University (Honors) |
| Honorary Degrees: | D. Eng. | Northeastern University |
| | D. Sci. | Worcester Polytechnic Institute |
| | D. Eng. | Worcester State College |
| | D. Sci. | Pontificia Universidad Católica de Valparaíso |

PROFESSIONAL EXPERIENCE

- **Dean:** Whitacre College of Engineering, Texas Tech University, Jan. 2011-
- **Board of Directors:** National Wind Institute, Texas Tech University 2011-
- **Board of Directors:** American Institute of Chemical Engineers 2017-2019
- Board of Directors: RAPID 2017- 2019
- **Director:** Center for Advanced Microgravity Materials Processing, a NASA Commercial Space Center at Northeastern University, Boston, Massachusetts, June, 1997-2006.
- **Interim Department Head:** Chemical Engineering, Northeastern University, Boston, MA, calendar year 2006.
- **George A. Snell Distinguish Professor of Engineering:** Northeastern University, June 1997-Dec. 2010. Date of Initial Appointment at Northeastern: June 1997. Tenure Status at Northeastern: Tenured, Professor.
- **Department Head:** Chemical Engineering, Worcester Polytechnic Institute, Worcester, Massachusetts, July 1989-1997. Date of Initial Appointment at WPI: July 1977, Tenure Status at WPI: Tenured, Professor.
- **Payload Specialist (Scientist Astronaut):** Flew STS-73 (USML-2), 1994-1996, Payload Specialist Candidate for STS 50 (USML 1), 1989 1992, Alternate (CAP Com.) May 1, 1991 flight of STS-50.
- **Payload Developer:** Fifty-two hours in low-gravity aircraft (KC-135) evaluating equipment and procedures and performing experiments for space applications. Directed and managed the design, the development and the construction of shuttle and ISS flight hardware (STS-50, STS-73, STS-107 and ISS Increments 4,5,6 & 8).

Non-Academic

- Badger Co., E. Weymouth, MA, Chemical Process Division
June, 1972 – Jan., 1973, Co op Work Assignment
- Cabot Corporation, No. Billerica, MA, Research & Development Division
Sept., 1969 – Jan., 1971 Co op Work Assignment

Consultant:

Industrial

- Technical Advisory Board **TVM**
Venture Capital Group based out of Munich, Germany
Evaluator of new technology for investment, Sept. 1999-2015.
- Raytheon Systems Company, Sudbury, MA
Evaluated and solved leak problems in Aegis Missile System cooling hoses
Apr. to July 2000.
- The Procter & Gamble Company, Cincinnati, OH
Developed zeolite crystal growth procedure for commercial applications, May 1994.
- Honeywell, Inc., Lexington, MA
Department of Defense, Work Classified, July 1980-1984.
- Kennecott Corporation, Lexington, MA
Modeling Spray Dryer Reactors for SO₂ Removal from Power Plant Utility Boilers
Model to be used for process scale up, July 1980-1982.
- Giner, Inc., Waltham, MA
"Key Personnel" on High Temperature Desulfurization Project, Jan. 1979 to Dec. 1979.
- Honeywell, Inc., Lexington, MA
Modeling of Cryogenic Processes for NASA's Skylab Program, Sept. 1977 to July 1978.

Government

- Chair of the Science and Technology Working Group (STWG) for the Advanced Life Support (ALS) Program. Committee established to evaluate all NASA's ALS systems and programs, 1999-2005.
- Member of NASA Re-Invention External Team. Established policy on how NASA chooses and performs science in space, 2003.
- Member of Advanced Protein Crystal Growth Facility (APCF) evaluation team for the European Space Agency (ESA) conducted by the European Science Foundation (ESF), 2001.
- Member of the ISS Payload Operations Concept and Architecture Assessment Study (POCAAS) Complete evaluation and recommendations of science payload integration and operations for the International Space Station and Shuttle operations, 2001-2002.
- Member ISS Cooperative Agreement Independent Review Team. Evaluated how to best use the ISS as a national laboratory, 2019.

PROFESSIONAL SOCIETIES, HONORS, AWARDS

Professional Societies

Elected to Board of Director, American Institute of Chemical Engineers (2017-2020)
Elected to the International Academy of Astronautics, 1998, full member 2004.
A Lifetime Member of the Association of Space Explorers, USA.
Member of the American Institute of Chemical Engineers, 1973-present
Elected Fellow of the American Institute of Chemical Engineers, Spring 2001.
Member of the IAF Microgravity Sciences and Processes Committee, 1996-present.
Served on the USRA Council for Microgravity Science and Applications, 1992 - 1998.
Elected to AIAA Technical Committee On Space Processing, 1990 - 1995; Clarkson CCDS
Representative For Code C on Space Station Freedom.
Elected to Advisory Board of the American Carbon Society, 1985-1991.
Sigma Xi, 1974-Present, Worcester Section, 1979-1981.
Catalysis Society of New England, Elected National Representative 1987-1990, Chairman,
1983 - 1985, Secretary Treasurer, 1977 - 1983.
Western Section American Institute of Chemical Engineers Treasurer, 1979 - 1982.

Honors and Awards

Distinguished lectureships:

1. International Meeting of Engineering Education-Colombian Association of Schools of Engineering “new normal, new challenges, and new developments” September 15, 2020.
2. TAMEST Annual Conference “The Value and Limitations of Performing Materials Science in Space” Austin TX January 2016.
3. Powder & Porous Materials 2015 Plenary Lecture “Zeolite Growth in Space-What has been Learned and How can it be Applied on Earth” Izmir Turkey October 2015.
4. Spring Meeting and Global Congress on Process Safety Plenary Lecture “You think you have safety concerns.....The flight of STS-73” Austin TX April 2015.
5. Cash Lecture, “Never let your fears get in the way of your dreams...one man’s journey to the stars” Texas Tech University, Lubbock TX, 2014.
6. Pontificia Universidad Católica de Valparaíso, “The sky is no longer the limit” Speech at the Opening Ceremony of the Academic Year, 2014, Valparaíso Chile, 2014.
7. CHEMECA Plenary Lecture, “Material Science In Space: Crystal Growth as an example... What has been learned?” Brisbane, Australia, 2013.
8. George & Ronya Memorial Lecture, Plenary 2012 ATLAS Conference.
9. John M. Coulson Memorial Lecture, Edinburgh, Scotland, 2005.
10. Duncan Lectureship North Carolina State University, 2001.
11. Inaugural Lecture of the Eyestone Distinguished Lecture Series, Kansas State University, 2000.
12. Robert D. Klein Lectureship Northeastern University, 2000.
13. “Plenary Lecture IAF Living and Working in Space from a Scientist/Engineer/ Teacher’s Perspective” Rio de Janeiro Brazil 2000.

14. National Academy of Sciences, “Zeolite Crystal Growth in Space: The Space Laboratory Years” Washington D.C., 1999.
15. Distinguished Lindsay Lectureship, Texas A & M, 1999.
16. The John McClanahan Henske Distinguished Lecture in Chemical Engineering “Nucleation and Growth of Zeolite Crystals” Yale University, 1998.
17. Schuit Lectureship in Catalysis, Eindhoven University of Technology, 1998.
18. Weissberger-Williams Lecturer, Eastman Kodak, 1997.
19. Practitioners’ Forum, AIChE Petrochem & Technochem Expo ’97 “Materials Processing in Space” two Plenary Lectures, Houston, TX 1997.
20. 35th Goddard Memorial Symposium Lecture, American Association of Science, Greenbelt, MD 1997.
21. Dow Lectureship Award, Clemson University, 1994.

Commencement Addresses:

College

1. Worcester State College, MA May 1997.
2. Northeastern University, MA June 1996.

High School

1. New Deal High School, TX May 2012.
2. Thayer Academy, MA June 1999.
3. Westport High School, MA June 1999.
4. Worcester Vocational High School, MA 1997.
5. Belmont High School, MA 1997.

Keynote Speeches:

1. “Globalizing Education in the 4th Industrial Revolution” Internationalization of Higher Education Platform (IZNHEP) – Internationalization Policies and Practices for Future Development, Bangkok, Thailand, November 29-30, 2018.
2. “Futuristic Mind for the Future of Higher Education” Internationalization of Higher Education Platform (IZNHEP) – Internationalization Policies and Practices for Future Development, Bangkok, Thailand, November 29-30, 2018.
3. “Space Flight – One Man’s Experience and Thoughts on Living and Working in Space and on Planetary Exploration” STARTECH, Houston, TX, November 12-14, 2018.
4. “Living and Working in Space: the Training, the Flight, the benefits” TSPE Annual Meeting, Lubbock, TX, June 22, 2018.
5. “Crystallizing Porous Materials in Low Earth Orbit; what has been learned and why it maybe of interest to you” InterPore 2018, Jubilee Speaker, New Orleans LA May 14, 2018.
6. “Engineering a Global Future” Sino-US Educational Leadership Conference, (MSSY) Harvard University, April 23, 2018.
7. “Motivating and Training Today’s youth to solve tomorrow’s problems; what I

- learned as a member of the US Astronaut's Corp." Northeast Section ASEE Education Conference, Northeastern University Boston, MA, May 1, 2015.
8. "Space Flight: The training, the adventure, the risk, the advancements...memories of an Astronaut" MSME Student Professional Development Conference, April 5, 2014.
 9. "Science in Manned Space: From a teacher, scientist and engineer's perspective" 6th International Congress of Chemical and Food Engineering, Puebla, Mexico, Feb. 24-27, 2009.
 10. "Performing Science in Low Earth Orbit: What is it like, what has been learned and what is the potential" AIAA Region I-NE Student Conference, Worcester, MA March 28, 2009.
 11. "Performing Science in Low Earth Orbit: What is it Like, What has been Learned and What is the Potential" Chicago Section of the AIChE Chicago, IL, Sept., 2008.
 12. "Space Travel, the risks, the science, the benefits" The 12th International Symposium of Loss Prevention and Safety Promotion in the Process, Edinburgh Scotland, May 22-24, 2007.
 13. "Science in Manned Space: From a teacher, scientist and engineer's perspective" 8th Congreso Internacional de Ingenieria, Monterrey, Mexico, 2007.
 14. "Space: A Place for Science and Inquiry" The 7th World Congress of Chemical Engineering," Glasgow, Scotland, Summer 2005.
 15. "Training and Flying in Space on STS-73" MASC/MASS Conference Worcester, MA, Fall 2003.
 16. "Space Flight and the Future of Mankind" Opening presentation 72nd Izmir International Fair, Izmir, Turkey, Aug. 2003.
 17. "Team Building at NASA: Reaching for the Stars" TVM Annual Meeting, Munich, Germany, June 2003.
 18. "Frontier in Chemical Engineering-A Space Shuttle Adventure?" AIChE Annual Meeting, Indianapolis, IN, Nov. 2002.
 19. "Flying in Space—One Man's Space Odyssey" Technology Conference 2002 Washington Group International, Inc., IMAX Theater, Boston, MA 2002.
 20. "Be an Astronaut; See the World—What's it really like? What science was done? What does the future hold for chemistry in space?" American Institute of Chemists, Boston, MA, Nov. 2002.
 21. "Exploring Space: Humans" Conference on Astrobiology, Madrid, Spain July 2002.
 22. "Training for Space Flight, Team Building and other Aspects of Preparation for Space" Conference on Astrobiology, Madrid, Spain, July 2002.
 23. "Team Building and Motivation" TVM Venture Capital Firm Munich, Germany, May, 2001.
 24. "Living and Working in space from a Scientist's Perspective" 2001: A Laboratory Odyssey 15th Annual Northeast Region Conference and Exhibition, sponsored by Clinical Laboratory Management Association, Clinical Ligand Assay Society and the American Association for Clinical Chemistry, April 2001.
 25. "Be an Astronaut; See the World-What's it Really Like!" 118th Annual Conference, The New England Waterworks Association, Burlington, VT, Sept. 1999.

26. "The Science of Space: Is it Real?" American Chemical Society's 31st Central Regional Meeting, Columbus, OH, June 1999.
27. "Materials Science in Space: Mission Specialists" Materials Research Society, 1998 Fall Meeting, Boston, MA, Nov. 1998.
28. "Living and Working in Space" McAuliffe Scholarship Dinner, Framingham State, Framingham, MA, 1998.
29. "Taking Risks in Business and in Life" Metal Treating Institute, Las Vegas, NM, March 27, 1998.
30. "Living and Working in Space" Metal Treating Institute (MTI), CEO's and senior executives, Las Vegas, NM, March 26, 1998.
31. "A Scientist/Astronaut Living and Working in Space" American Chemical Society, Northeastern Section, Bridgewater, MA Sept. 10, 1998.
32. "The Promise of Science in Space" Providence Engineering Society Annual Meeting, 1997 National Engineers Week Providence, RI 1997.
33. "Zeolite Crystallization in Low Earth Orbit—What Has Been Observed?" 1997 Gordon Conference, Plymouth State College, Plymouth, NH, June 1997.
34. "Space Flight: the Challenge, the Future" 29th Annual Conference for Engineering and Construction Contracting Division of American Institute of Chemical Engineers, San Diego, CA, Sept. 5, 1997.
35. "Space Flight: An Asia's Future" ATPAC Conference, San Francisco, CA, 1997.
36. "Living and Working in Space: A Scientist/Astronaut's Perspective" Boston Section AIChE, 1997 Annual Meeting, Boston, MA, Nov. 1997.
37. "Scientific Research in Space" 1995-1996 Class of White House Fellows, President's Commission on White House Fellowships, Washington, DC, March 1996.
38. "Living and Working in Space: A Scientist/Astronaut's Perspective" Massachusetts Association of Science Supervisors, 1996 Convention, Marlboro, MA 1996.
39. "Living and Working in Space: A Scientist/Astronaut's Perspective" Fall 1996-1997 Arts and Humanities Seminar Series, Framingham State College, Framingham, MA, Oct. 1996.
40. "Zeolite Crystal Growth: The Growth of Large Defect-Free Crystals in Space" NSTA 995 National Convention, Shell Science Seminar, Philadelphia, PA, March 1995.
41. "Microgravity Zeolite Crystal Growth," World Space Congress, Washington, DC, Aug. 1992.

Other Awards:

1. **2016-2017 Champion of Diversity Award**, Texas Tech University Latino/Hispanic Faculty & Staff Association
2. **2015 Fuels and Petroleum Division Outstanding lifetime Achievement Award**, Spring Meeting AIChE Austin TX April 2015.
3. **President's Excellence in Diversity and Equity Award**, Texas Tech University, May 2014.
4. **The New England Institute of Chemist Distinguished Chemist Award**, April 2010.

5. Recipient of the College of Engineering **Martin W. Essigmann Outstanding Teaching Award**, Northeastern University, Sept. 2009.
6. First recipient of the College of Engineering's **Outstanding Mentor Award**, Northeastern University, May 2006.
7. Pirandello Lyceum **I Migliori in Mens et Gesta Award**, (The Best in Mind and Deeds) presented by Boston's Italian American Community, 2005.
8. Named College of Engineering **Distinguished Professor, Northeastern University**, 2005.
9. Named **Associate Editor** "Habitation" a journal on physical, chemical and biological life support, 2004.
10. **Outstanding Research Award** College of Engineering Northeastern University, June 2001.
11. **Elected to the International Academy of Astronautics**, 1998, full member 2004.
12. Received the **McAuliffe Outstanding Scholarship Award**, Nov. 1998.
13. Presented with the key to the City of Marlboro, MA, Jan. 1997.
14. Named to the 1997 National Engineers Week All Star Team, Jan. 1997.
15. Honored guest at the Columbus Day Parade in Worcester, MA, Oct. 1996.
16. The **Man of the Year Award** presented by The Friends of Columbus, Walpole, MA, Oct. 1996.
17. Received the **1996 Outstanding Alumni Award in Science and Technology** and an honorary doctor of engineering degree from Northeastern University, June 1996.
18. Presented with the key to the City of Worcester, May 1996.
19. The **Isaiah Thomas Award** presented by The Worcester Area Chamber of Commerce for spirit of discovery reflecting that of Worcester's First Great Citizen, Isaiah Thomas, May 1996.
20. The **Paul Harris Fellowship** from the Rotary International District 7910 May, 1996.
21. The Board of Trustees' **Outstanding Creative Scholarship Award** for 1996, WPI, April 1996.
22. **Certificate of Achievement awarded by the Senate and House of Representatives of the Commonwealth of Massachusetts, April 1996.**
23. The **Robert Goddard Award to Outstanding Citizens** presented by the Goddard School, Worcester, MA, March, 1996.
24. Served as the honorary **Grand Marshall of the St. Patrick's Day Parade** in Worcester, MA, March 1996.
25. The **Unique Citizen Award** awarded by UNICO of Worcester, for unique contribution to community and country, Feb. 1996.
26. **Certificate of Achievement from NASA**, Nov. 1995.
27. **NASA Space Flight Medal** awarded by NASA, Nov. 1995.
28. The Albert Sacco, Jr. Scholarship, an endowed scholarship of \$200,000, established at WPI, Aug. 1995.
29. **Payload Specialist for STS-73 (USML-2)**, 1994-1996.
30. **AIChE Outstanding Paper Award**, "Zeolite Crystal Growth in Space--Preliminary Results from U.S. Microgravity Laboratory-1" Spring, 1993.

31. **Honored by the Worcester Area Chamber of Commerce** for bringing recognition to the Worcester area through NASA activities, Sept. 1992.
32. Payload Specialist Candidate for STS 50 (USML 1), 1990 1992.
33. Awarded the **1984 Admiral Ralph Earle Award** for meritorious contributions in applied sciences, specifically in the fields of catalysis and adsorbent deactivation. Awarded by the Worcester Engineering Society to an engineer or scientist under 35 years of age.
34. **Awarded Young Faculty Initiation Grant (National Science Foundation)**, April 1978.
35. Awarded DuPont Thermodynamics Faculty Grant, WPI, 1977.
36. Served on the Ad Hoc Committee for the symposium series presented during the dedication of the Ralph Landau Chemical Engineering Building, MIT, 1976.
37. Elected President of Chemical Engineering Graduate Student Council, MIT, 1975 76.
38. Chosen to represent MIT on six university lecture tours on graduate education, 1975.
39. **Awarded first prize in the Northeast Regional AIChE Student Paper Contest**, May 1973.
40. Elected to Sigma Xi 1974; Tau Beta Pi 1973; Omega Chi Epsilon 1972.

Advisor on student projects that earned special regional and national recognition:

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| 1. Northeast Regional AIChE Student Paper Contest (Second Place) | 2007 |
| 2. National American Institute of Chemical Engineers AIChE Student Paper Contest (Third Place) | 2006 |
| 3. Northeast Regional AIChE Student Paper Contest (Second Place) | 2006 |
| 4. National International Society of Pharmaceutical Engineers Student poster contest (First place) | 2005 |
| 5. National American Institute of Chemical Engineers Student poster contest (First place) | 2004 |
| 6. National AIChE Student Paper Contest (Third Place) | 2004 |
| 7. Northeast Regional AIChE Student Paper Contest (First Place) | 2004 |
| 8. Northeast Regional AIChE Student Paper Contest (First Place) | 2004 |
| 9. National AIChE Student poster contest (First place) | 2003 |
| 10. National AIChE Student Paper Contest (First Place) | 2002 |
| 11. Northeast Regional AIChE Student Paper Contest (First Place) | 2002 |
| 12. Northeast Regional AIChE Student Paper Contest (Third Place) | 2000 |
| 13. Northeast Regional AIChE Student Paper Contest (Second Place) | 1999 |
| 14. Sigma Xi Award (Ph.D.) | 1986 |

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| 15. Sigma Xi Award (MQP) | 1986 |
| 16. Northeast Regional AIChE Student Paper Contest (First Place) | 1986 |
| 17. American Society of Engineering Education Award | 1986 |
| 18. President's IQP Award | 1986 |
| 19. Sigma Xi Award (MQP) | 1984 |
| 20. Northeast Regional AIChE Student Paper Contest (First Place) | 1984 |
| 21. President's IQP Award | 1982 |
| 22. Sigma Xi Award (Ph.D.) | 1981 |

PUBLICATIONS

Journals and Books (by Area)

Carbon filaments, nano tubes and other nano structures:

1. Sacco, Jr., A. and Reid, R. C., "Water Limitation in the C-H-O System Over Iron" *AIChE J.*, **25**, 839 (1979).
2. Sacco, Jr., A. and Reid, R. C., "Morphological Changes on an Iron Catalyst and the Formation of Carbon Fibers in the C-H-O System" *Carbon*, **17**, 459 (1979).
3. Sacco, Jr., A. and Caulmare, J., "Preliminary Results in the Investigation of the Growth and Initiation Mechanism of Filamentous Coke" *Adv. Chem. Series* Editors L. F. Albright and R. T. K. Baker, **202**, 177-191, ACS, Washington, DC (1982).
4. Sacco, Jr., A., Thacker, P., Chang, N. and Chiang, A., "The Initiation and Growth of Filamentous Carbon from α -Iron in Hydrogen, Methane, Water, Carbon Dioxide, and Carbon Monoxide Gas Mixtures" *J. of Catal.*, **85**, 224 (1984).
5. Thacker, P. and Sacco, Jr., A., "Filamentous Coke Formation on Polycrystalline Iron Films and Foils in the C-H-O System" *8th International Congress on Catalysis*, **11**, 647-657, Berlin (West), Germany (1984).
6. Sacco, Jr., A., Geurts, F. W. A. H., Jablonski, G. A., Lee, S., and Gately, R. A., "Carbon Deposition and Filamentous Growth on Fe, Co, and Ni Foils Using $\text{CH}_4\text{-H}_2\text{-H}_2\text{O-CO-CO}_2$ Gas Mixtures," *J. of Catal.*, **119**, 322 (1989).
7. Jablonski, G. A., Sacco, Jr., A. and Gately, R. A., "Laser Interferometric Surface Free Energy Measurement of Thin Foils" *American Chemical Society, Division of Petroleum Chemistry*, **34**, 522 (1989).
8. Jablonski, G. A., Sacco, Jr., A. and Gately, R. A., "Measuring Surface Tension Of Thin Foils by Laser Interferometer: First Step in Generating Surface Phase Diagrams" *Novel Materials in Heterogeneous Catalysis*, Editors R. T. K. Baker and L. L. Murrell, *ACS Symposium Series*, **437**, 302 (1990).

9. Sacco, Jr., A., "Carbon Deposition and Filament Initiation and Growth Mechanisms on Iron Particles and Foils" *Carbon Fibers, Filaments and Composites*, Editors J. L. Figueiredo, R. T. K. Baker and K. J. Hüttinger, NATO Advanced Study Institute, **177**, 459 (1990).
10. Jablonski, G. A., Sacco, A., Jr. and Gately, R. A., "Measuring Surface Tension of Thin Foils by Laser Interferometer. First Step in Generating Phase Diagrams." *ACS Symposium Series*, **437**, 302-316, 1990.
11. Jablonski, G. A., and Sacco, Jr., A., "Laser Interferometric Measurement of the Surface Tension of Thin Foils" *J. Mater. Res.*, **6**, No. 4, 744 (1991).
12. Jablonski, G. A. and Sacco, Jr., A. "Laser Interferometric Measurement of the Surface Tension of Ni in a Vacuum" *Proceedings of SPIE*, Vol. **1553**, 546-557, San Diego, CA July 1991.
13. Jablonski, G. A., Geurts, F. W. A. H., Biederman, R. R. and Sacco, Jr., A., "Carbon Deposition over Fe, Ni, and Co Foils from CO-H₂-CH₄-H₂O-CO₂, CO-CO₂, CH₄-H₂, and CO-H₂-H₂O Gas Mixtures: I--Morphology" *Carbon*, **30**, 87 (1992).
14. Jablonski, G. A., F. W. A. H. Geurts and Sacco, Jr., A., "Carbon Deposition over Fe, Ni, and Co Foils from CO-H₂-CH₄-H₂O-CO₂, CO-CO₂, CH₄-H₂, and CO-H₂-H₂O Gas Mixtures:II--Kinetics" *Carbon*, **30**, 99 (1992).
15. Geurts, F. W. A. H. and Sacco, Jr., A., "The Relative Rates of the Boudouard Reaction and Hydrogenation of CO over Fe and Co Foils" Special Edition *Carbon*, **30**, 415 (1992).
16. Cnossen, R., Lee, S. and Sacco, Jr., A., "Carbon Deposition over Transition Metal Alloys I. Generation of <NiCo>, <FeNi> and <CoFe> Phase Diagrams" *Carbon*, **32**, 1143-1150 (1994).
17. Geurts, F. W. A. H., Cnossen, R. G., Sacco, Jr., A. and R. R. Biederman. "Carbon Deposition over Transition Metal Alloys II. Kinetics of Deposition Over <FeNi> and <FeCo> Alloys" *Carbon*, **32**, 1151-1169 (1994).
18. Van Dongeren, H., Pryputniewicz, R. J. and Sacco, Jr., A., "Electro Optical Interferometry for Study of Carbon Deposition on Transition Metal Surfaces: A Preliminary Study" *SPIE 1996 International Symposium on Optical Science, Engineering, and Instrumentation*, **2861**, 192-202 (1996).
19. Hincapie, B. O., Garces, L. J., Zhang, Q., Sacco, Jr., A. and Suib, S. L., "Synthesis of Mordenite Nanocrystals" *Microporous and Mesoporous Materials*, **67**, 19-26 (2004).
20. Richter, C., Ram, K. B., Patibandla, S., Menon, L. and Sacco, Jr., A., "Nanowire-Based Energetic Nanocomposites" *American Chemical Society, Division of Fuel Chemistry*, **51**, 100-101 (2006).
21. Menon, L., Aurongzeb, A., Patibandla, S., Ram, K. B., Richter, C. and Sacco, Jr., A., "Size Dependence of Energetic Properties in Nanowire-Based Energetic Materials" *Journal of Applied Physics*, **100**, Issue 3, 034317-034317-3 (2006).
22. Yilmaz, B., Warzywoda, J. and Sacco, Jr., A., "Spectroscopic characterization of the quantum wires in titanosilicates ETS-4 and ETS-10" *Nanotechnology*, **17**, 4092-4099, (2006).
23. Bazanna, S., Miraglia, P.Q. and Sacco, Jr., A., "The effect of nickel particle size on the

nucleation and growth rate of carbon filaments synthesized using Chemical Vapor Deposition” *Carbon* 2006.

24. Yilmaz, B., Deng, J., and Sacco, Jr., A., “Electrical Transport through Monatomic Titania Chains in Titanosilicate ETS-4” *Appl. Phys. Lett.* **90**, 152101-152101-3 2007.
25. Elhajj J., Ismail M.N., Warzywoda J., A. Sacco, Jr., A., Kurtz R. and Podlaha, E. J. “Electrochemical Fabrication of TiO₂-Au Nanocomposites” *Journal of Electrochemical Society*, **157** (1) D5-D9 (2010).

Education:

26. Sacco, Jr., A., "Undergraduate Research Myth or Reality?" *Chem. Eng. Ed.*, **XV**, No. 3, 121 (1981).
27. Briggs, R. and Sacco, Jr., A., "Environmental Considerations and Waste Planning on the Lunar Surface" *Lunar Bases & Space Activities of the 21st Century*, Editor W. W. Mendell, The Lunar and Planetary Institute, Houston, TX (1985).
28. Sacco, Jr., A., "The NASA GAS Program: A Stepping Stone To Education" *IEEE Trans. on Ed.*, **34**, Issue 1, 27-30 (1991).

Adsorption:

29. Sacco, Jr., A., Chung, B. and Aksoy, Y., "A Nondestructive Method to Measure Residual Adsorption Capacity of Charcoal Filters" *Chem. Eng. Comm.*, **17**, 43 (1982).
30. Sacco, Jr., A., Bac, N., Hammarstrom, J. L. and Chung, B., "Prediction of Residual Capacity in Thin Adsorbers" *Canadian Journal of Chem. Eng.*, **61**, 665 (1983).
31. Bac, N., Sacco, Jr., A. and Hammarstrom, J. L., "Measurement of the Residual Adsorption Capacity of Charcoal Filters Under Conditions of Variable Humidity" *Chem. Eng. Comm.*, **24**, 205 (1983).
32. Hammarstrom, J. L. and Sacco, Jr., A., "Investigation of Hydrogen Reactivity and Its Use As a Surface Probe on High Surface Area Copper Chromium Silver Impregnated Charcoal" *J. of Catal.*, **100**, 293 (1986).
33. Bac, N., Hammarstrom, J. L. and Sacco, Jr., A., "Thermal Decomposition Studies on Copper Chromium Silver Impregnated Activated Charcoal" *Carbon*, **25**, 545 (1987).
34. Hammarstrom, J. L. and Sacco, Jr., A., "Investigation of Deactivation Mechanisms of ASC Whetlerite Charcoal" *J. of Catal.*, **112**, 267 (1988).

Nucleation and growth:

35. Sacco, Jr., A., Thompson, R. and Dixon, A. G., "Microgravity Processing of Zeolites in Space" *Materials for Space-The Gathering Momentum, Society for the Advancement of Materials and Process Engineering*, 18th international SAMPE technical conference Vol. **18**, 330 (1986).
36. Sacco, A., Jr. and Thompson, R. W., “Professor Leonard B. Sand 1922-1985” *Zeolites*, **6**, 71 (1986).
37. Sacco, Jr., A., Thompson, R. W. and Dixon, A. G., “Microgravity Processing of Zeolites in Space” *International SAMPE Technical Conference*, **18**, 330-335, 1986.

38. Sand, L. B., Sacco, Jr., A., Thompson, R. W. and Dixon, A. G., "Large Zeolite Crystals: Their Potential Growth in Space" *Zeolites*, **7**, 387 (1987).
39. Scott, G., Dixon, A. G., Sacco, Jr., A. and Thompson, R. W., "Synthesis of Zeolite Na A in the Presence of Triethanolamine" *Proc. 8th Int. Zeol. Conf.*, 363, Amsterdam (1989).
40. Scott, G., Thompson, R. W., Dixon, A. G. and Sacco, Jr., A., "The Role of Triethanolamine in Zeolite Crystallization" *Zeolites*, **10**, 44 (1990).
41. Morris, M., Sacco, Jr., A., Dixon, A. G. and Thompson, R. W., "The Role of An Aluminum Tertiary Alkanolamine Chelate in the Synthesis of Large Crystal Zeolite Na A" *Zeolites*, **11**, 178 (1991).
42. Sacco, Jr., A., Thompson, R. W. and Dixon, A. G., "Zeolite Crystal Growth in Space" *Proceedings of the AIAA/IKI Microgravity Science Symposium*, 157-161, 1991.
43. Sacco, Jr., A., "Large Zeolites--Why and How To Grow In Space" *Proceedings of SPIE*, Vol. **1557**, 6-9, San Diego, CA July 1991.
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Patents

1. *Production of Nano-sized Zeolite A*

Authors: Al Sacco, Jr., David R. Corbin, Steven Suib

Description: A method was developed to make small zeolite crystals from non-clear solutions in less than ten minutes (compared to the usual several days). Small zeolite crystals are important as additives in detergents.

Issuance: 3/21/06, Patent Number: US 7,014,837 B2

2. *Method and adsorbent to separate mixtures of enantiomers (disclosure)*

Authors: Ozgur Karahan, Juliusz Warzywoda, Michael P. Manning, Albert Sacco Jr.,

Description: This invention is related to the generation of a chiral stationary phase. The chiral stationary phase obtained by the process of this invention is useful to resolve mixtures of enantiomers (chiral separation) by adsorption.

3. *Method of Making Titanosilicate ETS-4 Suitable for Quantum Wire Applications (disclosure)*

Authors: Bilge Yilmaz, Juliusz Warzywoda, Michael P. Manning, Albert Sacco, Jr,

Description: This invention relates to methods for preparing crystalline titanosilicate molecular sieve ETS-4 with predictably and precisely controlled characteristics and properties. The ETS-4 product obtained by this invention can be utilized as quantum wires due to its modified characteristics. Utilizing this invention ETS-4 product can be tailored for the specific needs of any application.

Other Refereed Publications: Conference Proceedings and Extended Abstracts:

1. Sacco, Jr., A., Manning, M. P. and Reid, R. C., "The Effect of H₂O/H₂ and CO₂/CO Ratios on the Reduction of Carbon Dioxide in the Bosch Process" *Intersociety Conference on Environmental Systems*, ASME 76-ENAs-7, San Diego, CA, July 1976.

2. Sacco, Jr., A. and Reid, R. C., "Limitations on Water Production in the Iron Catalyzed Bosch Process" *Intersociety Conference on Environmental Systems*, ASME 78-ENAs-4, San Diego, CA, July 1978.
3. Sacco, Jr., A. and Weiss, A. H., "Gas Chromatography Principles Applied to Air Filters" *Proceedings of the Chemical Defense Research Conference*, ARCSL SP 83026, 295, Nov. 1981.
4. Sacco, Jr., A., and Weiss, A. H., "Pulse Test for Measurement of Residual Adsorption Capacity of Air Filters" *Proceedings of the Chemical Defense Research Conference*, ARCSL SP 83026, 307, Nov. 1981.
5. Hammarstrom, J. L., Sacco, Jr., A. and Bac, N. "Preliminary Results on the Use of Hydrogen for Nondestructively Determining the Catalytic Activity of ASC Whetlerite" *Proceedings of the 1982 Scientific Conference on Chemical Defense Research*, ARCSL SP 83030, 369, June 1983.
6. Sacco, Jr., A. and Thacker, P., "The Formation of Filamentous Carbon on α -Iron" *Extended Abstracts 16th Biennial Conference on Carbon*, Vol. **16**, 525-526, San Diego, CA, July 1983.
7. Szostak, R., Weiss, A. H. and Sacco, Jr., A., "EDX Analysis of Whetlerized Charcoal Microareas" *Extended Abstracts 16th Biennial Conference on Carbon*, Vol. **16**, 373-374, San Diego, CA, July 1983.
8. Hammarstrom, J. L. and Sacco, Jr., A., "The Use of a Hydrogen Pulse Technique to Monitor the Chemical Activity of ASC Whetlerite" *Proceedings of the 1983 Scientific Conference on Chemical Defense Research*, CRDC SP 84014, 547, Oct. 1984.
9. Hammarstrom, J. L., and Sacco, Jr., A., "Magnetic Susceptibility Studies of ASC Whetlerite" *Proceedings of the 1983 Scientific Conference on Chemical Defense Research*, CRDC SP 84014, 563, Oct. 1984.
10. Sacco, Jr., A. and Hammarstrom, J. L., "Hydrogen Pulsing as a Measure of Chemical Activity of ASC Whetlerite" *Extended Abstracts 17th Biennial Conference on Carbon*, Vol. **17**, 128, Lexington, Kentucky, June 1985.
11. Sacco, Jr., A., "The Use of Nonequilibrium Phase Diagrams to Investigate Carbon Formation From Multicomponent Gas Mixtures over Transition Metals" *17th Biennial Conference on Carbon*, Vol. **17**, 474-475, Lexington, Kentucky, June 1985.
12. Sacco, Jr., A., Sand, L. B., Collette, D., Dieselman, K., Crowley, J. and Feitelberg, A. "Growth of Zeolite Crystals In The Microgravity Environment of Space" *Proceedings of the Get Away Special Experimenters' Symposium*, NASA Cont. Public. No. **2401**, 133-140, Oct. 1985.
13. Thacker, P. and Sacco, Jr., A., "Coke Filament Formation on Polycrystalline Iron films and Foils in the Carbon-Hydrogen-Oxygen System" *8th Int. Congr. Catal. Proc.*, 1985.
14. Bac, N., Gültop, T. and Sacco, Jr., A., "Breakthrough Prediction in Charcoal Filters" *18th Biennial Conference of Carbon*, Vol. **18**, 108-109, Worcester, MA, July 1987.
15. Sacco, Jr., A., Thompson, R. W., Dixon, A. G., Scott, G., and Ditr, J., "Growth of Large Zeolite Crystals in Space" NASA Contract Conference (NASA-CR-183262), 1988.
16. Sacco, Jr., A., Geurts, A., F. W. A. H., Jablonski, G. A. and Lee, S., "The Initiation and Growth Mechanism of Filamentous Carbon on Fe, Ni and Co Foils - A Comparative

- Study," *Extended Abstracts 19th Biennial Conference on Carbon*, Vol. **19**, 366 367, University Park, PA, June 1989.
17. Jablonski, G. A., Geurts, F. W. A. H., Sacco, Jr., A., Lee, S. and Biederman, R. R., "Filamentous and Free Carbon Morphologies in the Fe, Ni, and Co C H O System" *Extended Abstracts 19th Biennial Conference on Carbon*, Vol. **19**, 362 363, University Park, PA, June 1989.
 18. Geurts, F. W. A. H., Gately, R. A., Jablonski, G. A., Lee, S. and Sacco, Jr., A., "Effect of Fe Ni Alloys on Filamentous Carbon Nucleation and Growth at Fixed Carbon Gas Phase Activity" *Extended Abstracts 19th Biennial Conference on Carbon*, Vol. **19**, 414 415, University Park, PA, June 1989.
 19. Lee, S., and Sacco, Jr., A., "Generation of the Theoretical <FeNi>, <NiCo> and <CoFe> Phase Diagrams for the Study of Carbon Deposition from H₂-CO-CO₂-CH₄-H₂O " *Extended Abstracts, Carbone 90*, Paris, France 1990.
 20. Gately, R. A., Geurts, F. W. A. H., Lee, S. and Sacco, Jr., A., "The Study of Carbon Deposition over Iron Nickel Alloys" *Extended Abstracts, Carbone 90*, Paris, France 1990.
 21. Geurts, F. W. A. H., Jablonski, G. A. and Sacco, Jr., A., "The Kinetics of Carbon Deposition over Fe, Ni, and Co Foils from CO-CO₂, CH₄-H₂, and CO-H₂-H₂O Gas Mixtures" *Extended Abstracts, Carbone 90*, Paris, France 1990.
 22. Shorey, S. E., and Sacco, Jr., A., "Carbon Deposition over Fe, Co, and Ni Powders" *Extended Abstracts, Carbone 90*, Paris, France 1990.
 23. Sacco, Jr., A., "Microgravity Catalyst Synthesis" *Extended Abstracts No. 24, Synthesis and Properties of New Catalysts: Utilization of Novel Materials, Components, and Synthetic Techniques*, Editors: E. W. Corcoran, M. J. Ledoux, and J. R. Knox, MRS Fall Meeting, Boston, MA 1990.
 24. Cnossen, R. G., Lee, S. and Sacco, Jr., A., "Development of Surface Phase Diagrams for (Fe/Ni/Co) C H O Systems" *Extended Abstracts, 20th Biennial Conference on Carbon*, Santa Barbara, CA June 1991.
 25. Shorey, S. E., and Sacco, Jr., A., "Morphology Study of Carbon Deposition on Iron from Gas Mixtures of H₂-CO-CH₄-CO₂-H₂O " *Extended Abstracts, 20th Biennial Conference on Carbon*, Santa Barbara, CA June 1991.
 26. Geurts, F. W. A. H., Cnossen, R. G., Lee, S. and Sacco, Jr., A., "Carbon Deposition from C, H, O Gas Mixtures over <FeNi> and <FeCo> Alloy as a Function of Alloy Composition and Gas Phase Carbon Activity" *Extended Abstracts, 20th Biennial Conference on Carbon*, Santa Barbara, CA June 1991.
 27. Geurts, F. W. A. H. and Sacco, Jr., A., "The Relative Rates of the Boudouard Reaction and Hydrogenation of CO over Fe and Co Foils" *Extended Abstracts, 20th Biennial Conference on Carbon*, Santa Barbara, CA June 1991.
 28. Coker, E. N., Sotak, C. H., Dixon, A. G., Thompson, R. W. and Sacco, Jr., A., "An Investigation of Zeolite Synthesis Solution Homogeneity by ²⁷Al and ¹H Nuclear Magnetic Resonance Imaging" poster, *Extended Abstracts, Ninth International Zeolite Conference*, Montreal, Canada July 1992.

29. Hamilton, K. E., Thompson, R. W. Sacco, Jr., A. and Dixon, A. G., "The Factors Affecting the Nucleation of Zeolite X" poster presentation, *Extended Abstracts, Ninth International Zeolite Conference*, Montreal, Canada July 1992.
30. Durgin, W. W., Looft, F. J., Sacco, Jr., A., Thompson, R. W., Dixon, A. G., Roberti, D., Labonte, R. and Moschini, L., "Spaceflight Payload Design Flight Experience G-408" *Proceedings of 1992 Shuttle Small Payloads Symposium*, NASA Conference Publication **3171**, Lanham, MD Oct. 1992.
31. Sacco, Jr., A., Thompson, R. W. and Dixon, A. G., "Zeolite Crystal Growth in Space-- What Has Been Learned" *31st Aerospace Sciences Meeting and Exhibit*, Reno, NV Jan. 1993.
32. Bac, N., Sacco, Jr., A., Thompson, R. W., Dixon, A. G. and McCauley, L., "Thermal Design of a Novel Furnace for the Processing of Molecular Sieve Zeolites in Space" **56**, Editor: S. Güçeri, Proc. *1st International Conference on Transport Phenomena in Processing*, Technomic Publishing Company, Lancaster, PA 1993.
33. Sacco, Jr., A., Thompson, R. W. and Dixon, A. G., "Evaluation of Mixing Techniques and Protocols for Zeolite A and Zeolite X" *NASA Technical Memorandum 4456 - Materials Science on Parabolic Aircraft (The FY87-89 KC135 Microgravity Test Program)*, **35**, 1993.
34. Suer, M. G., Bac, N., Yilmaz, L., Gurkan, T. and Sacco, Jr., A., "Gas Separation with Zeolite Based Polyethersulfone Membranes" *International Symposium on Gas Separation Technology, Proceeds* **9**, Antwerp, Belgium 1993.
35. Sacco, Jr., A., Bac, N., Coker, E. N., Dixon, A. G., Warzywoda, J. and Thompson, R. W., "The Growth of Zeolites A, X and Mordenite in Space" *Joint "L+1" Science Review for USML-1 and USMP-1 with the Microgravity Measurement Group*, NASA Conference Publication 3272, Volume **I**, Huntsville, AL Sept. 1994.
36. Vandongeren, H., Geurtz, F. W. A. H. and Sacco, Jr., A., "The Influence of Silicon Contamination on Carbon Deposition Rate" *Book of Abstracts, 210th ACS National Meeting*, Chicago II, Aug. 1995.
37. Alexandrou, A., Gatsonis, N. A., Durgin, W. and Sacco, Jr., A., "Modeling of Macroscopic/Microscopic Transport and Growth Phenomena in Zeolite Crystal Solutions Under Microgravity Conditions" *Microgravity Materials Science Conference Proceedings*, **3342**, 457-462, Huntsville, AL 1996.
38. Apfel, R. E., Tian, Y., Jankovsky, J., Shi, T., Chen, X., Holt, R. G., Trinh, E., Croonquist, A., Thornton, K. C., Sacco, Jr., A., Coleman, C., Leslie, F. W., Matthiesen, D. H., "Drops in Space: Super Oscillations and Surfactant Studies" *NASA Conference Publication (Third Microgravity Fluid Physics, Conference)*, **3338**, 1299-1322, 1996.
39. Sacco, Jr., A., "Zeolites" *Extended Abstracts, American Astronautical Society 35th Goddard Memorial Symposium*, Greenbelt, MD March 1997.
40. Van Dongeren, H., Pryputniewicz, R. J. and Sacco, Jr., A., "The Use of Electro-Optic Interferometry to Study Carbon Deposition on Transition Metal Surfaces: A Preliminary Study" *AICHE 1997 Spring National Meeting*, Houston, TX, March 1997.

41. Alexandrou, A., Gatsonis, N. A., Shi, H. and Sacco, Jr., A., "Sedimentation of Heavy Crystal Particles Under Microgravity Conditions" Paper No. AIAA 98-0738, AIAA 36th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 1998.
42. Gatsonis, N. A., Alexandrou, A., Shi H., Ongewe B. and A. Sacco, Jr., "Modeling of Macroscopic/Microscopic Transport and Growth Phenomena in Zeolite Crystal Solutions Under Microgravity Conditions" 1998 *Microgravity Materials Science Conference*, 198-199, 1998.
43. Bac, N., Warzywoda, J. and Sacco, Jr., A., "Experiment III. Zeolite Crystal Growth in Microgravity—The USML-2 Mission" *Second United States Microgravity Laboratory: One Year Report*, Volume 1, Aug. 1998.
44. Sacco, A., Jr., "Solution Crystal Growth: Commercial Opportunities" 49th *International Astronautical Congress*, IAA-98-IAA.12.1.03, Melbourne, Australia, Sept. 1998.
45. Bac, N., Warzywoda, J., Rossetti, Jr., G., Valcheva-Traykova, M. and Sacco, Jr., A., "Zeolite Crystal Growth in Space" *Materials Research Society, 1998 Fall Meeting, Boston, MA, MRS Conference Proceedings*, Page 627, Nov. 1998.
46. Alexandrou, A., Gatsonis, N. A., Shi, H. and Sacco, Jr., A., "Sedimentation of Heavy Crystal Particles Under Microgravity Conditions" Paper No. AIAA 98-0738, *AIAA 36th Aerospace Sciences Meeting and Exhibit*, Reno, NV, Jan. 1998.
47. Gatsonis, N. A., Alexandrou, A., Shi, H., Ongewe, B. and Sacco, Jr., A., "Modeling of Macroscopic/Microscopic Transport and Growth Phenomena in Zeolite Crystal Solutions Under Microgravity Conditions" 1998 *Microgravity Materials Science Conference*, 198-199, 1998.
48. Bac, N., Warzywoda, J., Rossetti, Jr., G., Valcheva-Traykova, M. and Sacco, Jr., A., "Zeolite Crystal Growth in Space" *Materials Research Society, 1998 Fall Meeting, Boston, MA, MRS Conference Proceedings*, 627, Nov. 1998.
49. Gatsonis, N. A., Ongewe, B., Alexandrou, A. and Sacco, Jr., A., "Particle Simulation of Crystal Growth and Settling Under Variable Gravity" Paper No. AIAA 99-0950, *AIAA 37th Aerospace Sciences Meeting and Exhibit*, Reno, NV, Jan. 1999.
50. Gatsonis, N. A., Ongewe, B., Alexandrou, A. and Sacco, Jr., A., "A Two Phase Fluid Model of Crystal Settling Under Variable Gravity" Paper No. AIAA 99-0955, *AIAA 37th Aerospace Sciences Meeting and Exhibit*, Reno, NV, Jan. 1999.
51. Vold, R.E., Rossetti, Jr. G.A. and Sacco, Jr., A., "Hydrothermal Synthesis of Lead Doped Barium Titanate: A Poster Session" 1999 *Annual AIChE Meeting*, Dallas, TX, Materials Science and Engineering Student Poster Session 08002, Nov. 1999.
52. Gatsonis, N. A., Ongewe, B., Alexandrou, A. and Sacco, Jr., A., "Particle Simulation of Crystal Growth and Settling Under Variable Gravity" Paper No. AIAA 99-0950, *AIAA 37th Aerospace Sciences Meeting and Exhibit*, Reno, NV, Jan. 1999.
53. Gatsonis, N. A., Ongewe, B., Alexandrou, A. and Sacco, Jr., A., "A Two Phase Fluid Model of Crystal Settling Under Variable Gravity" Paper No. AIAA 99-0955, *AIAA 37th Aerospace Sciences Meeting and Exhibit*, Reno, NV, Jan. 1999.
54. Bac, N., Harpster, J. Maston, R. A. and Sacco, Jr., A., "A Low Temperature Furnace for Solution Crystal Growth on the International Space Station" *AIP Conference Proceedings (Space Technology and Applications International Forum)*, **504**, 499-504, 2000.

55. Valcheva-Traykova M., Warzywoda, J., Bac N. and Sacco, Jr., A., "Effects of the Growth in the Free Fall Environment of Low Earth Orbit on the Structure of Zeolite A" poster, *13th International Zeolite Conference*, Montpellier, France, July 2001.
56. Akata, B., Warzywoda, J., Weiss, A.H. and Sacco, Jr., A., "Catalyst structure dependent selectivity using zeolitic materials for ketone reduction" poster [P171], *Third International Conference on Inorganic Materials*, Steigenberger Hotel, Konstanz, Germany, 7-10 Sept. 2002.
57. Bazzana, B., Dumrul, S., Warzywoda, J., Biederman, R.R. and Sacco, Jr., A., "High-resolution scanning electron microscope imaging of zeolite Beta" poster [P176], *Third International Conference on Inorganic Materials*, Steigenberger Hotel, Konstanz, Germany, 7-10 Sept. 2002.
58. Bazzana, S. and Sacco, Jr., A., "Formation of carbon nanotubes on nickel films/particles using CVD" poster H7.4, *Symposium H, Three-dimensional Nanoengineered Assemblies*, 2002 MRS Fall Meeting, Hynes Convention Center and Sheraton Boston Hotel and Towers, Boston, MA, Dec. 2-6, 2002.
59. Shen, Y., Manning, M.P., Warzywoda, J. and Sacco, Jr., A., "Synthesis of zeolite Y nanocrystals from clear solutions" poster I7.16, *Symposium I, Nanomaterials for Structural Applications*, 2002 MRS Fall Meeting, Hynes Convention Center and Sheraton Boston Hotel and Towers, Boston, MA, Dec. 2-6, 2002.
60. Sacco, Jr., A., Warzywoda, J., Bazzana, S. and Miraglia, P., "Fundamental understanding of zeolite and zeo-type growth mechanisms using AFM and SEM" *2003 South African Chemical Engineering Congress*, Sun City, South Africa, Sept. 3-5, 2003.
61. Akata, B., Warzywoda, J., Weiss, A.H. and Sacco, Jr., A., "Characterization of acid sites in zeolite Beta by FT-IR and Meerwein-Ponndorf-Verley reaction" *Extended Abstract 18th North American Catalysis Society Meeting*, Cancun, Mexico, June 1-6, 2003.
62. Bazzana, S., Miraglia, P. Q. and Sacco, Jr., A., "Synthesis of Multiwalls carbon nanotubes on a nickel thin-film by a CVD process" *Extended Abstract 18th North American Catalysis Society Meeting*, Cancun, Mexico, June 1-6, 2003.
63. Song, H., Ilebusi, O. J. and Sacco, Jr., A., "Effect of Gravity Level on the Particle Shape and Size During Zeolite Crystal Growth" *NASA Conference Publication*, 521-530, 2003.
64. Akata, B., Yilmaz, B. and Sacco, Jr., A., "Microporous Titanosilicate ETS-10 as a Lewis acidic catalyst for Hydrogen Transfer Reactions" *Extended Abstract North American Catalysis meeting*, Philadelphia, June 2005.
65. Akata, B. and Sacco, Jr., A., "Control of product selectivity over terrestrial/control and flight zeolite Beta in the Meerwein-Ponndorf-Verley-Oppenauer Reactions" *Extended Abstract North American Catalysis meeting*, Philadelphia, June 2005.
66. Akata, B and Sacco, Jr., A., "Increasing cis-4-TBCHL selectivity over zeolite Beta in the Meerwein-Ponndorf-Verley reduction" *Extended Abstract North American Catalysis meeting*, Philadelphia, June 2005.
67. Sadasivan, V. D., Budil, D. E., Sacco, Jr., A. and Carrier, R. L., "Molecular Modeling of the C-Terminal End of Human Intestinal Mucin (MUC2) Predicts a Cisteine-Knot Tertiary Structure" *Abstracts of Papers, 231st ACS Meeting*, Atlanta, GA, March 2006.

68. Jirapongphan, S. S., Warzywoda, J., Budil, D. E. and Sacco, Jr., A., "Improved Docking Method for Organics Adsorbed in Zeolite Catalysts" *Abstracts of Papers, 231st ACS Meeting*, Atlanta, GA, March 2006.
69. Richter, C., Ram, B. K., Menon, L. and Sacco, Jr., A., "Nanowire-Based Energetic Nanocomposites" *Abstracts of Papers, 231st ACS Meeting*, Atlanta, GA, March 2006.

Total reviewed papers, conference proceedings and extended abstracts (published): 200

Technical Reports

These reports go through an internal technical review, are then printed, and are available to the public through Defense Documentation Center, Cameron Station Alexandria, Virginia.

Contract DAA15 76 0072

- a) Final Report (Feb. 1976 – Nov. 1979) "Residual Protective Life of Carbon Beds," (with A. H. Weiss and Y. Aksoy).
- b) Quarterly Progress Report No. 13 (June – Aug. 1979) "Residual Protective Life of Carbon Beds," (with Y. Aksoy). CSL#ARCSL CR 80061
- c) Quarterly Progress Report No. 12 (March – May 1979) "Residual Protective Life of Carbon Beds," (with W. F. Kladnig, A. H. Weiss, and Y. Aksoy). CSL#ARCSL CR 80023
- d) Quarterly Progress Report No. 11 (Dec. 1978 – Feb. 1979) "Residual Protective Life of Carbon Beds," (with W. F. Kladnig, A. H. Weiss, B. Chung, and Y. Aksoy). CSL#ARCSL CR 80022
- e) Quarterly Progress Report No. 10 (Sept. – Nov. 1978) "Residual Protective Life of Carbon Beds," (with A. Olcay, Y. Aksoy, and A. H. Weiss). CSL#ARCSL CR 80021

Contract DAAK11 79 0016

- a) Final Report (Dec. 1978 – Feb. 1980) "Hydrocarbon Pulse Testing for Collective Protective Filters," (with B. Chung).
- b) Quarterly Progress Report No. 5 (Dec. 1979 – Feb. 1980) "Hydrocarbon Pulse Testing for Collective Protective Filters," (with B. Chung and A. Paravar).
- c) Quarterly Progress Report No. 4 (Sept. – Nov. 1979) "Hydrocarbon Pulse Testing for Collective Protective Filters," (with B. Chung, A. Paravar, and H. Chi). CSL#ARCSL CR 80035
- d) Quarterly Progress Report No. 3 (June – Aug. 1979) "Hydrocarbon Pulse Testing for Collective Protective Filters," (with B. Chung, A. Paravar, and A. Weiss).
- e) Quarterly Progress Report No. 2 (March – June 1979) "Hydrocarbon Pulse Testing for Collective Protective Filters," (with B. Chung and A. Weiss). CSL#ARCSL CR 80012
- f) Quarterly Progress Report No. 1 (Dec. 1978 – March 1979) "Hydrocarbon Pulse Testing for Collective Protective Filters," (with B. Chung and A. Weiss). CSL#ARCSL CR 80011

Contract DAAK11 80 CO 0103

- a) Final Report (Oct. 1, 1981 – Jan. 1, 1982) "Residual Life Method for Determining Gas Protection of ASC Whetlerite Carbon Beds," (with J. Hammarstrom and N. Bac).
- b) Quarterly Progress Report No. 4 (June – Oct. 1981) "Residual Method for Determining Gas Protection of ASC Whetlerite Carbon Beds," (with J. Hammarstrom and N. Bac). CSL#ARCSL CR 81081
- c) Quarterly Progress Report No. 3 (April – June 1981) "Residual Life Method for Determining Gas Protection of ASC Whetlerite Carbon Beds," (with J. Hammarstrom and N. Bac). CSL#ARCSL CR 81080
- d) Quarterly Progress Report No. 2 (Jan. – March 1981) "Residual Life Method for Determining Gas Protection of ASC Whetlerite Carbon Beds," (with J. Hammarstrom and N. Bac). CSL#ARCSL CR 81079
- e) Quarterly Progress Report No. 1 (Oct. – Dec. 1980) "Residual Life Method for Determining Gas Protection of ASC Whetlerite Carbon Beds," (with J. Hammarstrom and N. Bac). CSL#ARCSL CR 81078

Contract DAAK11 82 C 0043

Annual Report (March 1982 – March 1983) "Method For Determining Catalytic Activity of ASC Whetlerite Carbon Beds," (with J. Hammarstrom). CRDC CR 8400

PROFESSIONAL PRESENTATIONS

Invited professional presentations:

1. "The Use of Phase Diagrams in Analyzing Complex Heterogeneous Systems" Carnegie Mellon University Seminar Series, March 1980.
2. "Modeling the Topochemical Reduction of Hematite in Carbon Monoxide and Hydrogen Mixtures" Cornell University Seminar Series, May 1981.
3. "The Growth of Filamentous Coke on α -Iron" Joint Spring Symposium of the New York New England Catalysis Societies, Yale University, March 1983.
4. "The Initiation and Growth Mechanism of Filamentous Coke in the C H O System" University of Connecticut, Seminar Series, Feb. 1984.
5. "The Use of Phase Diagrams to Investigate Complex Heterogeneous Catalyzed Gas Solid Reactions: Carbon (Coke) Formation" University of Rhode Island Seminar Series, Nov. 1984.
6. "Zeolite Growth in Space" Boeing Aerospace Company, Oct. 1985.
7. "Commercial Opportunities for Zeolite Growth in Space" Brookhaven National Laboratory, Long Island, NY, Jan. 1986.
8. "Zeolite Crystal Growth in Space" (with A. G. Dixon, R. W. Thompson, G. Scott, J. D'Itri) Gordon Research Conference, New London, NH, July 1988.
9. "The Initiation and Growth Mechanism of Filamentous Carbon Over Nickel and Cobalt Foils" SUNY Buffalo Lecture Series, Oct. 1988.
10. "The Modern Chemical Engineer," Northeastern Univ., Nov. 1988.
11. "The Potential for the Growth of Large Zeolites in Space" Tufts Lecture Series, Nov. 1988.

12. "Laser Interferometric Surface Free Energy Measurement of Thin Foils" Auburn University Lecture Series, May 1989.
13. "Carbon Deposition and Filament Initiation and Growth Mechanisms on Iron Particles and Foils" Guest Lecturer, NATO Advanced Study Institute, Alvor, Portugal, May 1989.
14. "Space Related Research and Technology Transfer" Connecticut Young Scholars Program, University of Hartford, West Hartford, CT, Aug. 1990.
15. "Zeolite Crystal Growth in Space" (with N. Bac) Battelle Advanced Materials CCDS Annual Meeting, Columbus, OH, Sept. 1990.
16. "Zeolite Crystal Growth in Space" NASA/ASEE Fellows' Seminar Series, Lewis Research Center, Cleveland, OH, July 1991.
17. "Space--A Stepping Stone Into America's Future" Connecticut Young Scholars Program, University of Hartford, West Hartford, CT, Aug. 1991.
18. "USML-1: America's First Dedicated Materials Science Mission" Weissberger-Williams Kodak Lecture Series, Kodak Company, Rochester, NY, Feb. 1992.
19. "Microgravity Zeolite Crystal Growth" World Space Congress, Washington, DC, Aug. 1992.
20. "Zeolite Crystal Growth in Space--Results from the USML-1 Shuttle Mission" Iowa State University Symposium Series, Sept. 1993.
21. "Zeolite Crystal Growth in Space--Preliminary Results" Clemson University Symposium Series, Dow Lectureship Award, Feb. 1994.
22. "Zeolite Crystal Growth in Space--What Has Been Learned?" Vanderbilt University Symposium Series, Oct. 1994.
23. "Zeolite Crystal Growth: The Growth of Large Defect-Free Crystals in Space" NSTA 1995 National Convention, Shell Science Seminar, Philadelphia, PA, March 1995.
24. "Zeolite Crystal Growth in Space--What Has Been Learned" Advanced Materials and Fluid Processes Technology Group, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, Feb. 1996.
25. "Materials Processing in Microgravity" Astronaut Candidate (ASCAN) Class of 1995, Lyndon B. Johnson Space Center, National Aeronautics and Space Administration, Houston, TX, March, 1996.
26. "Scientific Research in Space" 1995-1996 Class of White House Fellows, President's Commission on White House Fellowships, Washington, DC, March 25, 1996.
27. "Zeolite Crystal Growth in Microgravity" Spring 1996 Seminar Series, New Jersey Institute of Technology, Newark, NJ, April 1996.
28. "Investigating the Nucleation and Growth of Zeolite Crystals--Results from Low-Earth Orbit" Fall 1996 Seminar Series, Massachusetts Institute of Technology, Cambridge, MA, Oct. 1996.
29. "Living and Working in Space: A Scientist/Astronaut's Perspective" Fall 1996-1997 Arts and Humanities Seminar Series, Framingham State College, Framingham, MA, Oct. 1996.
30. "Studies on the Nucleation and Growth of Zeolite Crystals Aboard the Space Shuttle Columbia" Complex Fluids Seminar Series, Department of Chemical Engineering, Princeton University, Princeton, NJ, Nov. 1996.

31. "Investigating the Nucleation and Growth of Zeolite Crystals--Results from Low-Earth Orbit" Chulalongkorn University, Bangkok, Thailand, Jan. 1997.
32. "Establishing a National Space Agency" Technical Conference, National Research Council of Thailand, Bangkok, Thailand, Jan. 1997.
33. "Zeolite Crystal Growth in Microgravity--USML-2" Chiang Mai University, Chiangmai, Thailand, Jan. 1997.
34. "Materials Processing in Space" Ministry of Science, Technology and Environment, Bangkok, Thailand, Jan. 1997.
35. "USML-2: Living and Working in Space" Prince of Songkla University, Pattani, Thailand, Jan. 1997.
36. "Zeolite Crystal Growth—Low Earth Orbit" Spring Seminar Series, Connecticut College, New London, CT, March 1997.
37. "Investigating the Nucleation and Growth of Zeolite Crystals—Results from Low-Earth Orbit" Engelhard Corporation, Iselin, NJ, April 1997.
38. "Living and Working in Space—From the Perspective of a Scientist/Astronaut" Catalysis Society, New Jersey/New York/Pennsylvania Sections Joint Meeting, Lehigh University, Lehigh, PA, April 1997.
39. "Materials Processing in Space" Spring Colloquia, Lehigh University, Lehigh, PA, April 1997.
40. "Zeolite Crystallization in Low Earth Orbit—What Has Been Observed?" 1997 Gordon Conference, Plymouth State College, Plymouth, NH, June 1997.
41. "Investigating the Nucleation and Growth of Zeolite Crystals—Results From Low-Earth Orbit" Fall Colloquia, West Virginia University, Morgantown, WV, Nov.1997.
42. "Be an Astronaut; See the World-What's it Really Like!" EMC Corporation, Fitchburg, MA, June 1999.
43. "Growth of Zeolite A and Zeolite X in a Microgravity Environment" Technical Seminar, Boston University, Boston, MA, Jan. 1999.
44. "The Nucleation and Growth of Zeolite Crystals: Results From Low-Earth Orbit" Departments of Chemical Engineering and Chemistry, Clarkson University, Potsdam, NY April 23, 1999.
45. "The growth of Aluminosilicates in Low Earth Orbit: Is there a Difference?" Center for Macromolecular Crystallography, University of Alabama at Birmingham, AL, March 2000.
46. "The Growth of Aluminosilicates In Low Earth Orbit: What Has Been Learned" Department of Mechanical and Aerospace Engineering, North Carolina State University, April 2000.
47. "Be an Astronaut; See the World-What's it Really Like!" Department of Civil Engineering and the Department of Environmental Engineering the University of Nevada at Reno, May 2000.
48. "The Center for Advanced Microgravity Materials Processing: What is it? How does it function?" NJ-NSCORT Rutgers University, May 2000.
49. "Materials Science in Space, What Has Been Learned, What Will the 21st Century Bring?" The Minerals, Metals, & Materials Society 2001-2002 Lecture Series, March 2002.

50. "On the trail of quantum wire arrays" Physical Chemistry Seminar series, Department of Chemistry, The University of Utah, April 2007.
51. "Materials Science Experiments on the Shuttle and ISS" Department of Aeronautics and Astronautics, MIT May 2007.
52. "On the trail of quantum wire arrays: Why? What? And how do you know you have one?" ECE Distinguished Lecture Series, Northeastern University Nov. 2007.
53. "Performing Science in Low Earth Orbit: What is it like, what has been learned and what is the potential" Sigma Xi lecture, Natick Soldier Research, Development & Engineering Center, Jan. 2008.
54. "Performing Science in Low Earth Orbit: What is it like, what has been learned and what is the potential" The Technical University of Munich, July 2008.
55. "The Growth of Aluminosilicates in Low Earth Orbit; what has been learned?" The Technical University of Munich, July 2008.
56. "Natural Quantum Wire Arrays: Why? What? and How do you know you have one?" 1st IEEE International Workshop on Design and Test of Nano Devices, Circuits and Systems NDCS 2008 Boston, Sept. 2008.
57. "Don't let your fears get in the way of your dreams – chemical engineering in space" ChemEng 08, Birmingham, UK Oct. 2008.
58. "Transferable skills – how to widen your career horizons" ChemEng 08, Birmingham, UK Oct. 2008.
59. "Science in Manned Space from a teacher, scientist and engineer's perspective" Yeditepe University, Istanbul turkey Jan. 17, 2009.
60. "Science in Manned Space from a teacher, scientist and engineer's perspective" Middle East Technical University, Astronomy Dept., Ankara, Turkey, Jan. 22, 2009.
61. "Manned Space: What's it like, and how to train for it" Turkish Air force Academy, Istanbul, Turkey, Jan. 23, 2009.
62. "Silver ions and nanoparticles; their role in the visible light sensitization of methylene blue" (with Z. Ji, M. N. Ismail, and J. Warzywoda) Texas Tech University, Department of Chemical Engineering, Lubbock TX, Oct. 2, 2009.
63. "In search of a visible light photo catalyst: the effect of silver modification of titanosilicate ETS-10" (with Z. Ji, M. N. Ismail, and J. Warzywoda) University of Alberta, Edmonton Canada, Sept. 29, 2009.
64. "Flying in space: One man's first steps into Galileo's universe" Symposium *Galileo's Telescope and the Beginning of the Scientific Revolution and Space Exploration*, Harvard University, April 2009.
65. "In Search of Quantum Wire Arrays" (with O. Ozkanat, N. Bordeau, J. Deng, W. Yi, V. Narayanamurti, B. Yilmaz, J. Warzywoda, K. S. Ziemer, and Z. Ji) Department of Chemical, Material and Biomolecular Engineering, University of Connecticut, Storrs CN Sept. 2010.
66. "Living and Working in Space...An Engineer's/Teacher's Perspective" Texas Society of Professional Engineers (TSPE), Feb. 2011.
67. "Titanosilicates, are they natural host for quantum wires?" 2011 EUFP *Workshop on Biosensors and Advanced Materials*, Jeju Island South Korea, April 29-May 2, 2011.

68. "Leaving and working in space" perspectives of a teacher, scientist and Engineer", Sogang University, Seoul South Korea, May 3, 2011.
69. "Synthesis and Bandgap Engineering of Vanadosilicate AM-6 for Enhanced Visible Light Photocatalysis" Department of Chemical Engineering, University of Surrey, London England, Dec. 2012.
70. "International Programs at the Whitacre College of Engineering" Engineering Dean's Institute, American Society of Engineering Education, Scottsdale AZ, April 2014
71. "Living and Working in space - the ultimate in system engineering and operational research and sustainability" International Conf. on IE and Technical Management Austin, Texas, April 2017
72. "Living and Working in low earth orbit-memories of a space flyer" Chulalongkorn University, Bangkok Thailand, Aug. 2017
73. "Never let your fears get in the way of your dreams-one man's journey to the stars" Institute for the Promotion of Teaching Science and Technology, Bangkok Thailand, Aug. 2017
74. "The Value and Limitations of Performing Material Science in Space-a case study" National Science and Technology Development Agency, Bangkok Thailand Aug. 2017
75. "Human Space Flight: building teamwork in multiple interconnected complex organizations" Siam Cement Group, Bangkok Thailand Aug. 2017
76. "Living and working in space from scientific and humanitarian perspective – the flight of STS-73" Okan University Istanbul, Turkey, July 2017
77. "Becoming a Globally Elite College of Engineering" Middle East Technical University, Ankara, Turkey, July 2017
78. "Never let your fears get in the way of your dreams" Boston Museum of Science, Boston, Massachusetts, July 2017

Other technical presentations:

79. "The Effect of H₂O/H₂ and CO₂/CO Ratios on the Reduction of Carbon Dioxide in the Bosch Process" Intersociety Conference on Environmental Systems, San Diego, CA, July 1976.
80. "The Analysis of Complex Catalytic Reaction Systems Using Phase Diagrams," Joint Spring Symposium of the New York New England Catalysis Societies, Yale University, March 1978.
81. "Limitations on Water Production in the Iron Catalyzed Bosch Process", Intersociety Conference on Environmental Systems, San Diego, CA, July 1978.
82. "The Use of Phase Diagrams in Analyzing Complex Heterogeneous Reaction Systems" 6th North American Catalysis Society Meeting, Chicago, IL, March 22, 1979.
83. "Undergraduate Research - Myth or Reality?" 88th Annual Meeting of the American Society of Engineering Education, June 1980.
84. "A Nondestructive Method to Measure Residual Adsorption Capacity of Charcoal Filters" National AIChE Meeting, Houston, TX, April 1981.
85. "Modeling the Formation of Filamentous Coke" American Chemical Society Meeting, New York, NY, Aug. 1981.

86. "Modeling of Adsorption Behavior in Packed Bed Adsorbers" Annual AIChE Meeting, New Orleans, LA, Nov. 1981.
87. "Pulse Test for Measurement of Residual Adsorption Capacity of Air Filters" (with A. H. Weiss) Chemical Defense Research Conference, Aberdeen, MD, Nov. 1981.
88. "Gas Chromatography Principles Applied to Air Filters" (with A. H. Weiss) Chemical Defense Research Conference, Aberdeen, MD, Nov. 1981.
89. "Growth of Carbon Filaments in the C H O Fe System" Brown University, April 1982.
90. "Preliminary Results on the Use of Hydrogen for Nondestructively Determining the Catalytic Activity of ASC Whetlerite" (with J. L. Hammarstrom) Chemical Defense Research Conference, Aberdeen, MD, Nov. 1982.
91. "The Initiation and Growth Mechanism of Filamentous Coke on α -Iron" American Chemical Society Meeting, Seattle, Washington, 1983.
92. "The Formation of Filamentous Carbon on α -Iron" 16th Biennial Conference on Carbon, San Diego, CA, July 1983.
93. "EDX Analysis of Whetlerized Charcoal Microareas" 16th Biennial Conference on Carbon, San Diego, CA, July 1983.
94. "Magnetic Susceptibility Studies of ASC Whetlerite" (with J. L. Hammarstrom) Chemical Defense Research Conference, Aberdeen, MD, Nov. 1983.
95. "The Use of a Hydrogen Pulse Technique to Monitor the Chemical Activity of ASC Whetlerite" (with J. L. Hammarstrom) Chemical Defense Research Conference, Aberdeen, MD, Nov. 1983.
96. "Identifying and Quantifying Catalyst Deactivation Using a Probe Gas" (with J. L. Hammarstrom) National AIChE Meeting, Anaheim, CA, May 1984.
97. "Filamentous Coke Formation on Polycrystalline Iron Foils and Films" US Hungarian Workshop, Budapest, Hungary, July 1984.
98. "Filamentous Coke Formation on Polycrystalline Iron Films and Foils in the C H O System" 8th International Congress on Catalysis, Berlin, Germany, July 1984.
99. "The Use of Hydrogen Reactivity to Measure Losses in ASC Whetlerite Chemical Activity" (with J. L. Hammarstrom) Chemical Research and Development Center Scientific Conference on Chemical Defense Research, Nov. 1984.
100. "Zeolite Crystal Growth in Space" (with L. B. Sand, R. W. Thompson and A. G. Dixon) National AIChE Meeting, Houston, TX, March 1985.
101. "Hydrogen Pulsing as a Measure of Chemical Activity of ASC Whetlerite" (with J. Hammarstrom) 17th Biennial Conference on Carbon, Lexington, KY, June 1985.
102. "The Use of Nonequilibrium Phase Diagrams to Investigate Carbon Formation from Multicomponent Gas Mixtures over Transition Metals" 17th Biennial Conference on Carbon, Lexington, KY, June 1985.
103. "Growth of Zeolite Crystals in the Microgravity Environment of Space" (with L. B. Sand and R. W. Thompson) Get Away Special Experimenter's Symposium, Greenbelt, MD, Oct. 1985.
104. "Investigation of the Reaction Between Hydrogen and High Surface Area Transition Metal Impregnated Charcoal Catalysts" (with J. Hammarstrom) Second Research Symposium of the Catalysis Society of New England, WPI, Worcester, MA, Nov. 1985.

105. "A Transmission Electron Microscopy Study of Evaporated and Sputtered Thin Films of Fe, Ni, Co and Their Alloys" (with R. Sisson et al.) 13th International Conference on Metallurgical Coatings, April 1986.
106. "Zeolites and their Potential Role in Industrial Commercialization of Space" Sigma Xi Faculty Lecture Series, WPI, April 1986.
107. "Microgravity Processing of Zeolites in Space" (with R. W. Thompson and A. G. Dixon) 18th National SAMPE Technical Conference, Seattle, WA, Oct. 1986.
108. "Deactivation Mechanism of Cu Cr Ag Impregnated Carbon Catalyst" (with J. L. Hammarstrom) 10th North American Meeting of the Catalysis Society, San Diego, CA, May 1987.
109. "Breakthrough Prediction in Charcoal Filters" (with N. Bac and T. Gültop) 18th Biennial Conference on Carbon, Worcester, MA, July 1987.
110. "Determination of the Catalytic Phase(s) for Filamentous Carbon Formation Over Nickel and Cobalt Foils" (with F. W. A. H. Geurts, G. A. Jablonski, S. Lee and R. A. Gately), Third Research Symposium of the Catalysis Society of New England, Worcester, MA, Nov. 1987.
111. "Oxidation and Reduction of Ilmenite: Application to Oxygen Production on the Moon" (with R. Briggs) Lunar Bases & Space Activities of the 21st Century, Houston, TX, April 1988.
112. "Lunar Processing: Determining the Answers" (with R. Briggs) The Space 88 Conference, Albuquerque, NM, Aug. 1988.
113. "Mechanisms of Ilmenite Reduction with Hydrogen" (with R. Briggs) National AIChE Meeting, Houston, TX, April 1989.
114. "The Initiation and Growth Mechanism of Filamentous Carbon Over Iron, Nickel, and Cobalt Foils" 11th North American Meeting of the Catalysis Society, Dearborn, MI, May 1989.
115. "The Initiation and Growth Mechanism of Filamentous Carbon on Fe, Ni and Co Foil – A Comparative Study" (with F. W. A. H. Geurts, G. A. Jablonski, and S. Lee) 19th Biennial Conference on Carbon, University Park, PA, June 1989.
116. "Filamentous and Free Carbon Morphologies in the Fe, Ni, and Co C H O System" (with G. A. Jablonski, F. W. A. H. Geurts, S. Lee, and R. R. Biederman) 19th Biennial Conference on Carbon, University Park, PA, June 1989.
117. "Effect of Fe-Ni Alloys on Filamentous Carbon Nucleation and Growth at Fixed Carbon Gas Phase Activity" (with F. W. A. H. Geurts, R. A. Gately, G. A. Jablonski, and S. Lee) 19th Biennial Conference on Carbon, University Park, PA, June 1989.
118. "Synthesis of Zeolite Na A in the Presence of Triethanolamine" (with G. Scott, A. G. Dixon, and R. W. Thompson) 8th International Zeolite Conference, Amsterdam, July 1989.
119. "Laser Interferometric Surface Free Energy Measurement of Thin Foils" (with G. A. Jablonski and R. A. Gately) Annual ACS Meeting, Miami, FL, Sept. 1989.
120. "Zeolite Crystal Growth in Space It's Commercial Potential" Commercial Use of Space Conference, Arlington, VA, May 1990.

121. "Generation of the Theoretical $\langle\text{FeNi}\rangle$, $\langle\text{NiCo}\rangle$ and $\langle\text{CoFe}\rangle$ Phase Diagrams for the Study of Carbon Deposition from $\text{H}_2\text{-CO-CO}_2\text{-CH}_4\text{-H}_2\text{O}$ " (with S. Lee) Carbone 90, Paris, France, July 1990.
122. "The Study of Carbon Deposition over Iron Nickel Alloys" (with R. A. Gately, F. W. A. H. Geurts, and S. Lee) Carbone 90, Paris, France, July 1990.
123. "The Kinetics of Carbon Deposition over Fe, Ni, and Co Foils from Co-CO_2 , $\text{CH}_4\text{-H}_2$, and $\text{CO-H}_2\text{-H}_2\text{O}$ Gas Mixtures" (with F. W. A. H. Geurts, G. A. Jablonski) Carbone 90, Paris, France, July 1990.
124. "Carbon Deposition Over Fe, Co and Ni Powders" (with S. E. Shorey) Carbone 90, Paris, France, July 1990.
125. "Reduction of Iron Titanium Oxide for Oxygen Production on the Moon" (with R. Briggs) Annual AIChE Meeting, Chicago, IL, Nov. 1990.
126. "The Technological Humanist Engineering and Science at Worcester Polytechnic Institute" Annual AIChE Meeting, Chicago, IL, Nov. 1990.
127. "Microgravity Catalyst Synthesis" MRS Fall Meeting, Boston, MA, Nov. 1990.
128. "Mechanisms of Ilmenite Reduction and Their Impact on the Design of Effective Reaction Systems" (with R. Briggs) 2nd Sym. UA/NASA Resources of Near-Earth Space, Tucson, AZ, Jan. 1991.
129. "Microgravity Science on Space Laboratory" (with B. Dunbar) 29th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 1991.
130. "Development of Surface Phase Diagrams for $(\text{Fe/Ni/Co})\text{ C H O}$ Systems" (with R. G. Clossen and S. Lee) 20th Biennial Conference on Carbon, Santa Barbara, CA, June 1991.
131. "Morphology Study of Carbon Deposition on Iron from Gas Mixtures of $\text{H}_2\text{-CO-CH}_4\text{-CO}_2\text{-H}_2\text{O}$ " (with S. E. Shorey) 20th Biennial Conference on Carbon, Santa Barbara, CA, June 1991.
132. "Carbon Deposition from C, H, O Gas Mixtures over $\langle\text{FeNi}\rangle$ and $\langle\text{FeCo}\rangle$ Alloy as a Function of Alloy Composition and Gas Phase Carbon Activity" (with F. W. A. H. Geurts, R. G. Clossen, and S. Lee) 20th Biennial Conference on Carbon, Santa Barbara, CA, June 1991.
133. "The Relative Rates of the Boudouard Reaction and Hydrogenation of CO over Fe and Co Foils" (with F. W. A. H. Geurts) 20th Biennial Conference on Carbon, Santa Barbara, CA, June 1991.
134. "Large Zeolites Why and How To Grow In Space" SPIE The International Society for Optical Engineering Annual Meeting, San Diego, CA, July 1991.
135. "Laser Interferometric Measurement of the Surface Tension of Ni in a Vacuum" (with G. A. Jablonski) SPIE the International Society for Optical Engineering Annual Meeting, San Diego, CA, July 1991.
136. "U.S. Microgravity Science, the First USML Mission" (with J. Prah) Carl Gunnard Johnson Colloquium Series 1991-1992, WPI, Worcester, MA, Jan. 1992.

137. "The Role of Silica Source Stability and Solubility in Mordenite Synthesis from Gels" (with J. Warzywoda, R. W. Thompson, and A. G. Dixon) Ninth International Zeolite Conference, Montreal, July 1992.
138. "An Investigation of Zeolite Synthesis Solution Homogeneity by 27Al and 1H Nuclear Magnetic Resonance Imaging" (with E. N. Coker, C. H. Sotak, A. G. Dixon, and R. W. Thompson) Ninth International Zeolite Conference, Montreal, Canada, July 1992.
139. "The Factors Affecting the Nucleation of Zeolite X" (with K. E. Hamilton, R. W. Thompson, and A. G. Dixon) Poster Presentation, Extended Abstracts, Ninth International Zeolite Conference, Montreal, Canada, July 1992.
140. "Spaceflight Payload Design Flight Experience G-408" (with W. W. Durgin, F. J. Looft, R. W. Thompson, A. G. Dixon, D. Roberti, R. Labonte, and L. Moschini) NASA 1992 Shuttle Small Payloads Symposium, Lanham, MD, Oct. 1992.
141. "Zeolite Crystal Growth in Space--What Has Been Learned" (with R. W. Thompson and A. G. Dixon) 31st Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 1993.
142. "Zeolite Crystal Growth in Space--Preliminary Results from USML-1" (**Won the AIChE Outstanding Paper Award**). AIChE Spring National Meeting, Houston, TX March 1993.
143. "Zeolite Crystal Growth in Space: Preliminary Results From USML-1" (with R. W. Thompson and A. G. Dixon) ACS Spring Meeting, Denver, CO, March 1993.
144. "Gas Separation with Zeolite Based Polyethersulfone Membranes" (with M. G. Suer, N. Bac, L. Yilmaz, and T. Gurkan) International Symposium on Gas Separation Technology, Proceeds 9, Antwerp, Belgium, 1993.
145. "USML-1: Zeolite" (with R. W. Thompson and A. G. Dixon) Joint "L+1" Science Review for USML-1 and USMP-1, 1993 AIAA Space Programs and Technologies Conference and Exhibit, Huntsville, AL, Sept. 1993.
146. "USML-1: Glovebox Investigation 16" (with R. W. Thompson and A. G. Dixon) Joint "L+1" Science Review for USML-1 and USMP-1, 1993 AIAA Space Programs and Technologies Conference and Exhibit, Huntsville, AL, Sept. 1993.
147. "Zeolite Crystal Growth" (with L. McCauley) USML-1 Science Results II, 1993 AIAA Space Programs and Technologies Conference and Exhibit, Huntsville, AL, Sept. 1993.
148. "Zeolite Crystal Growth (ZCG), Support to Crystal Growth (SCG), and Investigations into Polymer Membrane Processing (IPMP)" (with F. Jelinek and L. McCauley) SPACEHAB Mission 1 (STS-57) Experiments Symposium, Washington, DC, Oct. 1993,
149. "Zeolite Crystal Growth Experiments: A Comparison Between Ground Based Controls and Flight Results" (with R. W. Thompson, A. G. Dixon, and J. Warzywoda) 44th International Astronautical Congress, Graz, Austria Oct. 1993.
150. "Carbon Deposition Over the Transition Metal Alloys: <FeNi> and <FeCo>" (with F. W. A. H. Geurtz) AIChE Annual Meeting, St. Louis, MO, Nov. 1993.
151. "Carbon Deposition Over <FeNi> and <FeCo> Alloys" (with F. W. A. H. Geurts) 1994 Fall Symposium, The Catalysis Society of New England, Worcester, MA, Dec. 1994.
152. "The Influence of Silicon Contamination of Carbon Deposition Rate" (with H. Van Dongeren) 210th ACS National Meeting, Chicago, IL, Aug. 1995.
153. "The Influence of Silicon on Carbon Deposition Rate" (with H. Van Dongeren and F. W. A. H. Geurts) The Catalysis Society of New England, Worcester, MA, Dec. 1995.

154. "Zeolite Crystal Growth in Microgravity" (with N. Bac) Space Technology & Applications International Forum (STAIF-96), Albuquerque, NM, Jan. 1996.
155. "The Influence of Silicon on Carbon Deposition Rate" (with H. Van Dongeren and F. W. A. H. Geurts) The Catalysis Society of New England, 1995 Symposium (rescheduled from fall, 1995), Worcester, MA, April 1996.
156. "The Use of Electro-optic Interferometry to Study Carbon Deposition on Transition Metal Surfaces" (with H. Van Dongeren and R. J. Pryputniewicz) Society for Experimental Mechanics and Worcester Polytechnic Institute, Worcester, MA, April 1996.
157. "Modeling of Macroscopic/Microscopic Transport and Growth Phenomena in Zeolite Crystal Solutions Under Microgravity Conditions" (with A. Alexandrou, N. A. Gatsonis, and W. Durgin) poster presentation, Microgravity Materials Science Conference, Huntsville, AL, June 1996.
158. "Modeling Multicomponent Diffusion and Reaction in a Zeolite Membrane" (with J. Harris and A. G. Dixon) AIChE 1996 Annual Meeting, Chicago, IL, Nov. 1996.
159. "Zeolites" 35th Goddard Memorial Symposium, American Astronautical Society, Greenbelt, MD, March 1997.
160. "The Use of Electro-Optic Interferometry to Study Carbon Deposition on Transition Metal Surfaces: A Preliminary Study" (with H. Van Dongeren), AIChE 1997 Spring National Meeting, Houston, TX, March 1997.
161. "Be an Astronaut; See the World-What it's really like!" 15th North American Catalysis Society Meeting Chicago, IL, May 19, 1997.
162. "Status of Industrial/Academic/Government Partnership Aboard the International Space Station and Beyond" Workshop, 29th Annual ECC Conference, San Diego, CA, Sept. 5, 1997.
163. "Sedimentation of Heavy Crystal Particles Under Microgravity Conditions" (with A. Alexandrou, N. A. Gatsonis, and H. Shi) AIAA 36th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 1998.
164. "Investigating the Nucleation and Growth of Zeolite Crystals in Space" Space Technology and Applications International Forum, 3rd Conference on Commercial Development of Space, Albuquerque, NM, Jan. 1998.
165. "Research Opportunities at CAMMP: Expanding the Horizons of Materials Science and Technology" (with N. Bac, G. Rossetti, Jr., and J. Warzywoda) Centennial Poster Session: Celebrating the Diversity of Northeastern Scholarship, Northeastern University, May 1998.
166. "Solution Crystal Growth: Commercial Opportunities" 49th International Astronomical Congress, IAA-98-IAA.12.1.03, Melbourne, Australia, Sept. 1998.
167. "Zeolite Crystal Growth in Space" Materials Research Society, 1998 Fall Meeting, Boston, MA, Nov. 1998.
168. "Hydrothermal Synthesis of Lead Doped Barium Titanate: A Poster Session" (with R.E. Vold, G.A. Rossetti, Jr. and A. Sacco, Jr.) 1999 Annual AIChE Meeting, Dallas, TX, Materials Science and Engineering Student Poster, Session 08002, Nov. 1999.
169. "A low Temperature Furnace for Crystal Growth on the International Space Station" (with N. Bac, J. Harpster and R. Maston), Space Technology and Applications International

- Forum, 3rd Conference on Commercial Development of Space, Albuquerque, NM, Jan. 2000.
170. "The Center for Advanced Microgravity Materials Processing: A Partnership Between NASA, Northeastern University and Industry" (with N. Bac) Space Technology and Applications International Forum, 3rd Conference on Commercial Development of Space, Albuquerque, NM, Jan. 2000.
 171. "The Role of The Scientist-Astronaut in Material Science Research" 51st IAF meeting Brazil Oct. 2000.
 172. "The Growth of Aluminosilicates In Low Earth Orbit Future studies on the ISS" (with N. Baç) AIChE Spring National Meeting, Houston Texas April 2001.
 173. "Zeolite Crystal Growth Facility for Solution Crystal Growth on ISS" (with N. Baç, J. Harpster, and R. Maston) AIChE Spring National AIChE Meeting, Houston Texas April 2001.
 174. Multiple Science and operational presentations on training ISS and Shuttle Crew members (with N. Baç) Houston, TX 2001.
 175. "Zeolite Crystal Growth Facility on The International Space Station" (with N. Baç) AIAA Annual Symposium on International Space Station utilization, Oct. 15-18, 2001.
 176. "Static zeolite MCM-22 synthesis using two-level factorial design" (with J. Warzywoda, S. Dumrul and S. Bazzana) Zeolites and Mesoporous Materials at the Dawn of the 21st Century, 13th International Zeolite Conference, France, July 8-13, 2001.
 177. "Modeling of Silicalite crystallization from clear solution" (with K.A. Carlsson, and Warzywoda J.) Zeolites and Mesoporous Materials at the Dawn of the 21st Century, 13th International Zeolite Conference, France, July 8-13, 2001.
 178. "Interaction/synergistic effect of Mg²⁺ and Ba²⁺ on the size and morphology of the zeolite L crystals" (with S. Ferchiche and J. Warzywoda) Zeolites and Mesoporous Materials at the Dawn of the 21st Century, 13th International Zeolite Conference, France, July 8-13, 2001.
 179. "Synthesis of zeolite Sr,K-ZK-5" (with P.C. Russell, S.L. Stuhler, A.L. Kouli and J. Warzywoda) Zeolites and Mesoporous Materials at the Dawn of the 21st Century, 13th International Zeolite Conference, France, July 8-13, 2001.
 180. "Effect of Gravity Level on the Particle Shape and Size During Zeolite Crystal Growth" (with H. W. Song and O. J. Ilrbusi) Material Research Meeting Huntsville, Alabama July 2002.
 181. "Observations of layer growth in synthetic zeolites by field emission scanning electron microscopy" (with S. Bazzana, S. Dumrul, and J. Warzywoda, L. Hsiao, L. Klass, M. Knapp, J.A. Rains, E.M. Stein, M.J. Sullivan, C.M. West and J.Y. Woo) 2nd FEZA Conference, Italy, Sept. 1-5, 2002.
 182. "Direct synthesis of ZSM-5 crystals on gold modified by zirconium-phosphonate multilayers" (with S. Dumrul, and J. Warzywoda) 2nd FEZA Conference, Italy, Sept. 1-5, 2002.
 183. "Catalyst structure dependent selectivity using zeolitic materials for ketone reduction" (with B. Akata, J. Warzywoda, and A.H. Weiss) Third International Conference on Inorganic Materials, Germany, Sept. 7-10, 2002.

184. "High-resolution scanning electron microscope imaging of zeolite Beta" (with S. Bazzana, S. Dumrul, J. Warzywoda, and R.R. Biederman) Third International Conference on Inorganic Materials, Germany, Sept. 7-10, 2002.
185. "Formation of carbon nanotubes on nickel films/particles using CVD" (With S. Bazzana, A.) 2002 MRS Fall Meeting, Boston, MA, Dec. 2-6, 2002
186. "Synthesis of zeolite Y nanocrystals from clear solutions" (with Y. Shen, M.P. Manning, and J. Warzywoda) 2002 MRS Fall Meeting, Boston, MA, Dec. 2-6, 2002.
187. "Effect of Gravity Level on the Particle Shape and Size During Zeolite Crystal Growth" (with H. W. Song, and O. J. Ilrbusi) Material Research Meeting Huntsville, Alabama July 2002.
188. "Characterization of acid sites in zeolite Beta by FT-IR and Meerwein-Ponndorf-Verley reaction" (with B. Akata, J. Warzywoda and A.H. Weiss) 18th North American Catalysis Society Meeting, Cancun, Mexico, June 1-6, 2003.
189. "Synthesis of Multiwalls carbon nanotubes on a nickel thin-film by a CVD process" (with S. Bazzana and P. Miraglia) 18th North American Catalysis Society Meeting, Cancun, Mexico, June 1-6, 2003.
190. "The nature of Lewis Acid sites and their effect on Meerwein-Ponndorf-Verley selectivity" (with B. Akata) 2003 AIChE Annual Meeting, San Francisco, CA, Nov. 16-21, 2003.
191. "MCM-41 mesoporous molecular sieve synthesis using two-level factorial design" (A.M. Mendonza, J. Warzywoda and A. Sacco, Jr.) 227th ACS National Meeting, Anaheim, CA. March 28·2004.
192. "Synthesis of Titanosilicate ETS-4 Utilizing Organic Precursors" (B. Yilmaz, K.G. Shattuck, P.Q. Miraglia, J. Warzywoda and A. Sacco, Jr.) The 14th International Zeolite Conference Cape Town South Africa, April 25-30, 2004.
193. "Zeolite Crystal Growth on the International Space Station" (with M. P. Manning, R.P. Miller, G. McLaughlin, A. Sacco, B. Akata, S. Bazzana, S.S. Jirapongphan, A.M. Mendonza, B. Yilmaz and J. Warzywoda) The 14th International Zeolite Conference Cape Town South Africa, April 25-30 2004.
194. "Microporous Titanosilicate ETS-10 as a Lewis acidic catalyst for Hydrogen Transfer Reactions" (B. Akata, B. Yilmaz and A. Sacco, Jr.) poster, North American Catalysis meeting, Philadelphia, June 2005.
195. "Control of product selectivity over terrestrial/control and flight zeolite Beta in the Meerwein-Ponndorf-Verley-Oppenauer Reactions" (Akata, B. and A. Sacco, Jr.) North American Catalysis meeting, Philadelphia, June 2005.
196. "Increasing cis-4-TBCHL selectivity over zeolite Beta in the Meerwein-Ponndorf-Verley reduction" (B. Akata and A. Sacco, Jr.) North American Catalysis meeting, Philadelphia, June 2005.
197. "Self-orienting growth of ETS-4 films" (B. Yilmaz and A. Sacco, Jr.) poster, Gordon Conference, June 2005.
198. "Self-orienting growth of ETS-4 films" (B. Yilmaz and A. Sacco, Jr.) Gordon Conference, June 2005.
199. "Engineering the Natural Quantum Wires in ETS-4" (B. Yilmaz and A. Sacco, Jr.) MRS Fall Meeting, Boston, MA, 2005.

200. "Structural Prediction of the C-Terminal End of Human Intestinal Mucin (MUC2) Using Molecular Modeling" (V. Sadasivan, A. Sacco, Jr., D. E. Budil and R. L. Carrier) 2006 NSTI Nanotechnology Conference and Trade Show, Boston, MA, May 9, 2006.
201. "Molecular Modeling of the C-terminal End of Human Intestinal Mucin (MUC2) Predicts a Cysteine-knot Tertiary Structure" (V. Sadasivan, A. Sacco, Jr., D. E. Budil and R. L. Carrier) 231st American Chemical Society National Meeting, March 30, Atlanta, GA., 2006.
202. "Improved docking method for organics adsorbed in zeolite catalysts" (S. S. Jirapongphan, J. Warzywoda, D.E. Budil and A. Sacco, Jr.), 231st ACS National Meeting March 26–30, Atlanta, GA, 2006.
203. "The evolution of Chemical Engineering: The Next Twenty Years" 2006 ASEE New England Section Annual Conference, Worcester, MA. March 18, 2006.
204. "Molecular Modeling of the Human Intestinal Mucus for Advanced Oral Drug Delivery" (V. Sadasivan, A. Sacco, Jr., D. E. Budil, S. Gulla and R. Carrier) poster, American Association of Pharmaceutical Scientists North East Regional Discussion Group, 9th Annual Meeting, Rocky Hill, CT, April 28, 2006.
205. "Thermal Analyses of ETS-4 Crystals Grown from Synthesis Mixtures of Different Alkalinity" (B. Yilmaz, J. Warzywoda and A. Sacco, Jr.) poster, The International Symposium on Zeolites and Microporous Crystals (ZMPC), Yonago Japan, July 30 – Aug. 2, 2006.
206. "Titanosilicate ETS-10 as a Lewis acid catalyst in the Meerwein-Ponndorf-Verley Reaction" poster, (B. Akata, B. Yilmaz and A. Sacco, Jr.) The International Symposium on Zeolites and Microporous Crystals (ZMPC), Yonago Japan, July 30 – Aug. 2, 2006.
207. "ETS-10 as a Lewis acid catalyst for Hydrogen Transfer Reactions" (B. Akata, B. Yilmaz and A. Sacco, Jr.) The 5th Tokyo Conference on Advanced Catalytic Science and Technology (TOCAT 5), Tokyo, Japan, July 23 – 28, 2006.
208. "Role of Adsorbates in Determination of Adsorption Sites in Zeolite HY: A Theoretical Study" poster, (S.S. Jirapongphan, J. Warzywoda, D.E. Budil and A. Sacco, Jr.) The International Symposium on Zeolites and Microporous Crystals (ZMPC), Yonago Japan, July 30 - Aug. 2, 2006.
209. "Titanosilicate ETS-10 Thin Film Preparation on Fused Silica Optical Fibers" (Z. Ji, J. Warzywoda and A. Sacco, Jr.) The International Symposium on Zeolites and Microporous Crystals (ZMPC), Yonago Japan, July 30 - Aug. 2, 2006.
210. "Quantum Wires in Titanosilicate ETS-4" (B. Yilmaz, J. Warzywoda and A. Sacco, Jr.) poster, Annual AIChE Meeting, San Francisco, CA, Nov. 2006.
211. "Controlling the Quantum Wire Quality in Crystalline Titanosilicates ETS-4 and ETS-10" (B. Yilmaz, J. Warzywoda and A. Sacco, Jr.) poster, AIChE Meeting, San Francisco, CA, Nov. 2006.
212. "Effect of Temperature, Analyte Concentration and Cell Growth Phase on the Luminescence of Pseudomonas Putida TVA8 Induced by Trichloroethylene" (J. Han, K. Bergman, B. Applegate, K. S. Ziemer, A. Sacco, Jr.) AIChE Meeting, San Francisco, CA, Nov. 2006.

213. "Simulation of Adsorption in a Modified Zeolite Y Used for Separating Chiral Compounds" (S. S. Jirapongphan, J. Warzywoda, D. E. Budil, A. Sacco, Jr.) Annual AIChE Meeting, San Francisco, CA, Nov. 2006.
214. "Fabrication and Characterization of Polymeric Surfaces for Bacteria Adhesion in Whole Cell Biosensor Using PECVD" (A. Sharma, D. D. Burkey, A. Sacco, Jr. and K. S. Ziemer) Annual American Institute of Chemical Engineers Meeting San Francisco, CA, Nov. 2006.
215. "Studying the Human Intestinal Mucin (Muc2) Using Molecular Modeling Approaches for Drug Transport Study" (V. D. Sadasivan, S. Gulla, D. E. Budil, A. Sacco, Jr. and R. L. Carrier) Annual AIChE Meeting, San Francisco, CA, Nov. 2006.
216. "Device Integration of the ETS-4 Quantum Wire Arrays" (B. Yilmaz, J. Warzywoda and A. Sacco, Jr.) Annual AIChE Meeting, San Francisco, CA, Nov. 2006.
217. "A Faculty Team Approach to Chemical Engineering Unit Operation's Laboratory" (R. Willey, A. Sacco, Jr., R. L. Carrier, D. D. Burkey, S. Murthy, C. Lee-Parsons and K. S. Ziemer) ASEE Annual Meeting: ChE: Innovations in the Laboratory, Hawaii, July 2007.
218. "First Unseeded Synthesis of Large-Pore Vanadocilicate AM-6 Crystals" (M. N. Ismail, O. Ozkanat, Z. Ji, J. Warzywoda and A. Sacco, Jr.) 234th ACS National Meeting & Exposition, Boston, MA, Aug. 2007.
219. "Size and Morphological Control, and Spectroscopic Characterization of Open Framework Titanosilicate ETS-10 crystals for Quantum Wire Applications" (J. Zhaoxia, J. Warzywoda, T. Goodrich, Z. Cai, K. S. Ziemer and A. Sacco, Jr.), ACS National Meeting & Exposition Boston, MA, Aug. 2007.
220. "Investigation of In-situ Growth of Carbon Nanotubes via Chemical Vapor Deposition for Field-Effect Transistor (CNTFET) Applications" poster, (E A. Pandowo, K. S. Ziemer, J. G. Leong, D. M. Callahan, Jr., and A. Sacco, Jr.) MRS Fall Meeting, Boston, MA, Nov. 2007.
221. "First Unseeded Synthesis of Large-Pore Vanadosilicate AM-6 Crystals" (M. N. Ismail, O. Ozkanat, Z. Ji, J. Warzywoda, A. Sacco Jr.) American Institute of Chemical Engineers, Annual Meeting, Salt Lake City, Utah, November 2007.
222. "Growth of ETS-10 Films on Gallium Arsenide for Photocatalytic Applications" (M. N. Ismail, J. Warzywoda, A. Sacco Jr.) American Institute of Chemical Engineers, Annual Meeting, Salt Lake City, Utah, November 2007.
223. "Quantum Wires in the Framework of ETS-4 and ETS-10" (O. Ozkanat, J. Deng and A. Sacco, Jr.) Annual American Institute of Chemical Engineers Meeting Salt Lake City, UT, Nov. 2007.
224. "Synthesis and Engineering of Microporous Titanosilicate ETS-10 for Quantum Wire and Photocatalytic Applications" poster (Z. Ji, J. Warzywoda and A. Sacco, Jr.) The Materials Links Intercollegiate Symposium on Interdisciplinary Graduate Research, Boston, MA, Feb. 2007.
225. "Center For Advanced Microgravity Materials Processing (CAMMP): Materials for Demanding Environments" Molecular Engineering Industrial Advisory Board, University of Newcastle, Newcastle on Tyne, 2007.

226. "Electrosynthesis of TiO₂ and Au Nanoparticles for Solar Applications" Abstract #37 (J. Elhajj, J. J. Warzywoda, A. Sacco, Jr. and E. J. Podlaha) 213th Meeting of the Electrochemical Society (ECS) Phoenix, AZ, May 18-22, 2008.
227. "Electrogenerated TiO₂-Au Composites: Examination of Au Nanoparticles Electrodeposition" poster (J. Elhajj, M. Ismail, J. Warzywoda, A. Sacco, Jr. and E.J. Podlaha) Research & Scholarship Expo 2008, Northeastern University, Boston, MA, March 2008,
228. "Integration of Titanosilicate ETS-10 Crystals with Organosilane Functionalized Gallium Nitride Substrates" (M.N. Ismail, T.L. Goodrich, Z. Ji, K.S. Ziemer, J. Warzywoda and A. Sacco, Jr.) Annual AIChE Meeting, Philadelphia, Nov. 2008.
229. "Photocatalytic Degradation of Methylene Blue on Multifunctional Titanosilicate ETS-10" (Z. Ji, D.M. Callahan Jr., M.N. Ismail, J. Warzywoda and A. Sacco, Jr.) Annual AIChE Meeting, Philadelphia, Nov. 2008.
230. "Probing the "Quality" of Intrinsic Semiconducting -O-Ti-O-Ti- Chains in Titanosilicate ETS-10" (Z. Ji, M. Murdoch, D. M. Callahan Jr., J. Warzywoda, R. F. Howe and A. Sacco, Jr.) Annual AIChE Meeting, Philadelphia, Nov. 2008.
231. "I-V CHARACTERISTICS OF QUANTUM WIRE ARRAYS IN THE FRAMEWORK OF ETS-4 AND ETS-10" (O. Ozkanat, P. Ryan, W. Yi, J. Deng, N. McGruer and A. Sacco, Jr.) Annual AIChE Meeting, Philadelphia, Nov. 2008.
232. "Synthesis and Characterization of Ag-ETS-10Core-Structured-Photocatalyst" (M. N. Ismail, Z. Ji, J. Warzywoda and A. Sacco, Jr.), Annual AIChE Meeting, Tennessee, Nov. 2009.
233. "Synthesis and Characterization of Ag-ETS-10@ETS-10 core-shell Photocatalyst" (M.N. Ismail, Z. Ji, J. Warzywoda, A. Sacco Jr.) American Institute of Chemical Engineering, Annual Meeting, Nashville, TN, Nov. 2009.
234. "Assembly and Characterization of Titanosilicate ETS-10 Photocatalyst on Aminopropyltrimethoxysilane Functionalized Gallium Nitride Surfaces" (M.N. Ismail, T.L. Goodrich, Z. Ji, K.S. Ziemer, J. Warzywoda, A. Sacco Jr.) 11th JCF- Frühjahrssymposium, Essen, Germany, March 2009 (Poster).
235. "Synthesis of Nano-Anatase to Produce Small ETS-10 Crystals for Enhanced Textile Properties" (S. Shafeque, J. Warzywoda and A. Sacco, Jr.) Annual AIChE Meeting, Nashville, Nov. 2009.
236. "Resumption of Bioluminescent Gene Expression in Whole-Cell Bacterial Biosensors After Performing High Temperature Switch" (S. Fernandez, F. Marealle, J. Han, D. M. Callahan, Jr., K. Bergman, J. Piret, K. S. Ziemer and A. Sacco, Jr.) Annual AIChE Meeting, Nashville, Nov. 2009.
237. "Transition Metal Isomorphous Substitution in Vanadosilicate AM-6 Framework" (M.N. Ismail, D. Shea, J. Warzywoda, A. Sacco Jr.) American Chemical Society, 240th National Meeting & Exposition, Boston, August 2010 (Poster).
238. "Investigation of Characteristics of Urea and Butyrylcholine Chloride Biosensors Based on Ion-Selective Field-Effect Transistors Modified by the Incorporation of Heat-Treated Zeolite Beta Crystals" (E. Soy, V. Arkhypova, S. Dzyadevych, J. Warzywoda, A. Sacco, Jr. and B. Akata) HH7.35 poster MRS Boston, Dec. 2011.

239. "Titanosilicates, Are They Natural Host for Quantum Wires?" (A. Sacco, Jr., O. Ozkanat, N. Bordeau, J. Deng, W. Yi, V. Narayanamurti, B. Yilmaz, J. Warzywoda, K. S. Ziemer, and Z. Ji) Annual AIChE Meeting, Pittsburgh, Oct. 2012.
240. "Building a College-Wide Safety Culture: Opportunities and Challenges" (A. Sacco, Jr. and K. S. Ziemer) Two presentation: Process Safety and Department's Head Forum, Annual AIChE Meeting, Pittsburgh, Oct. 2013.
241. "The crystal quality of AM-6" (R. Tekin, J. Warzywoda, and A. Sacco, Jr.) Annual AIChE Meeting, Minneapolis, MN Oct 29- Nov. 2017.

Other Major Speeches, Public Relations, and Related Activities (all invited)

1995

- NASA Regional Education Program, "Reach for the Stars," Keynote Speaker, Worcester, MA
- The Alumni Executive Forum of Northeastern University, Keynote Speaker, Newton, MA

1996

- Vermont Society of Professional Engineers, Keynote Speaker, Engineers' Week Conference, Burlington, VT
- Appeared on the television show "Home Improvement," Hollywood, CA
- UNICO of Worcester, Keynote Speaker, UNICO of Worcester Friendship Dinner, Worcester, MA
- Association of Teachers in Math in Massachusetts, Keynote Speaker, ATMIM and Math West Conference, Worcester, MA
- Mass Academy, Keynote Speaker, Regional Science and Engineering Fair, Worcester, MA
- WPI President's Advisory Council, Guest Speaker, Presidential Forum, Worcester, MA
- Civil Air Patrol, Keynote Speaker, Civil Air Patrols Massachusetts Wing Annual Conference, Leominster, MA
- Project Presentation Day, Keynote Speaker, A Silver Anniversary Celebration Event, Worcester, MA
- Worcester Area Chamber of Commerce, Keynote Speaker, 121st Annual Banquet, Mechanics Hall, Worcester, MA
- Rotary International District 7910, Keynote Speaker, Annual Conference, Leominster, MA
- Massachusetts Association of Science Supervisors, Keynote Speaker, 1996 Convention, Marlboro, MA
- Worcester Foundation for Biomedical Research, Keynote Speaker, "Partners in Science" Awards Ceremony, Shrewsbury, MA
- Boston Society of Civil Engineers, Keynote Speaker, Annual Meeting, Museum of Science, Boston, MA
- American Business Women's Association, Keynote Speaker, Business Associate Night, Worcester, MA

- Northeastern University, Commencement Address, Class of 1996, Boston, MA
- Fourteenth Annual Frontiers/Strive Program, Keynote Speaker, Closing Ceremony, Worcester, MA
- STARS (Science Teachers Area Resources Swap), Keynote Speaker, Tenth Anniversary Meeting, U Mass Lowell, Lowell, MA
- Friends of Columbus, Keynote Speaker, Walpole, MA
- MassCUE (Massachusetts Computer Using Educators) 1996 Annual Conference, Keynote Speaker at Session 1 and 2, Worcester, MA
- The Society of Pharmaceutical Technology Professionals, Boston Area Chapter, Keynote Speaker, Cambridge, MA
- Hamilton Standard Space Systems International, Inc., USML-2 Mission Highlights Presentation, Windsor Locks, CT

1997

- Taped two educational television programs directed toward children for the Thailand Television Network, Bangkok, Thailand.
- Featured on a Thai news/interview television program, Bangkok, Thailand.
- Taped an educational science television program, Bangkok, Thailand.
- Premier Group of Companies, USML-2 Presentation, Bangkok, Thailand.
- Yupparach Wittayalai School, USML-2 Mission Highlights Presentation, Chiang Mai, Thailand.
- Bangkok Planetarium, Science in Space Presentation (two presentations), Bangkok, Thailand.
- Bangkok Planetarium, The Importance of Science in the Classroom, presented to 300 teachers, Bangkok, Thailand.
- Science Society of Thailand and Bangkok Bank Headquarters, USML-2---Materials Processing Presentation, Bangkok, Thailand.
- WPI Alumni Reception (for prospective students), USML-2 Mission Highlights Presentation, Bangkok, Thailand.
- International School of Bangkok, USML-2 Mission Highlights Presentation, Bangkok, Thailand.
- WPI School of Industrial Management, 1997 Annual Meeting, Keynote Speaker, Worcester, MA.
- ATPAC Conference, Keynote Speaker, San Francisco, CA.
- Boston Section AIChE, 1997 Annual Meeting, Keynote Speaker, Boston, MA
- Institution of Chemical Engineers, 75th Anniversary Jubilee Week, "Chemical Engineering - Where Next?" Panel Discussion, University of Nottingham, Nottingham, England.
- Nashoba Valley and Acton Chambers of Commerce Business Exposition, Keynote Speaker, Boxborough, MA.

- Science and Technology Camp for high school seniors sponsored by ARCO, the University of Alaska, and the Anchorage, Fairbanks, and Kenai School Districts, Keynote Speaker, Anchorage, AK.
- Camp YES! for high school seniors sponsored by Sprint Business, interactive video conference with students in Dallas, TX.
- 29th Annual ECC (Engineering and Construction Contracting Division of AIChE), Conference, Keynote Speaker, San Diego, CA.
- North Shore Women in Business/North Shore Chamber of Commerce, Keynote Speaker, Danvers, MA.
- Northeastern University, Centennial Celebration, College of Engineering Open House, Keynote Speaker, Boston, MA.
- Hommocks School District, Space Exploration Day (done at the request of the Association of Space Explorers, USA), Astronaut Presentation, Hommocks Middle School, Mamaroneck, NY.
- Rensselaer Polytechnic Institute, NASA-IDGE Popular Lecture Series on Space, Astronaut Presentation, Troy, NY.

1998

- American Consulting Engineers Council of New England, Annual Excellence Awards, Keynote Speech, Newton, MA.
- An interview with writer/science reporter, John Yemma, and Al Sacco, Jr., regarding science in space, Commercial Space Centers, and research activities at Northeastern University was published in THE BOSTON GLOBE MAGAZINE, dated Jan. 25, 1998.
- Panelist in a Public Broadcasting System production “Open for Business” ISS Teleconference,” an interactive, live satellite program, which was telecast to more than 530 sites across the country, Feb. 1998.
- Metropolitan New York Alumni Chapter of Northeastern University, Keynote Speaker, New York City, NY.
- AIChE New Jersey Section, Student Awards Night, Astronaut Presentation, Rutgers University.
- Panelist in a Space Exploration Day panel discussion, *Space Technology and Its Application to Industry*, during National Manufacturing Week, Chicago, IL
- Industry – University – Technikon Co-operation Workshop, Speech on the American Perspective of Obtaining University Funding, University of Cape Town, South Africa.
- Interview on the “Front Row,” a television program in South Africa, discussing living and working in space.
- Studium Generale Series, Astronaut Talk, Schuit Institute of Catalysis, Eindhoven University of Technology, Eindhoven, The Netherlands.
- Science and Technology Camp for high school seniors sponsored by ARCO, the University of Alaska, and the Anchorage, Fairbanks, and Kenai School Districts, Keynote Speaker, Anchorage, AK.
- American Chemical Society, Northeastern Section, Keynote Speaker, “A Scientist/Astronaut Living and Working in Space.” Bridgewater, MA Sept. 10, 1998.

- Building Bridges Keynote Speaker, a hands-on interactive engineering day for high school students, Northeastern University, Boston, MA.
- College of Engineering Advisory Committee Keynote Speaker, Northeastern University, Boston, MA.
- Publicity interviews in Burlington, VT, and Portland, ME: WCAX-TV (CBS), WCSH-TV (NBC), WGME-TV (CBS), WPXT-TV (Fox).
- Publicity interview with Scott Tetrault on Fox TV regarding John Glenn's space shuttle flight.
- WBZ radio interview on the David Brudnoy Show (nationally syndicated).

1999

- The American Institute of Chemical Engineers, "Careers in Chemical Engineering," panel discussion to address the many career opportunities available to chemical engineers.
- The School of Engineering Technology- Northeastern University, "Be an Astronaut; See the World: What is it really like" Honors award banquet, Dinner Speaker.
- NJIT Albert Dorman Honors College, Honors Colloquium Series, Spring 1999, Be an Astronaut-See the World-What it's really Like".
- Building Bridges, Northeastern University Spring 1999, "Flying on the Space Shuttle-What's it Like, What was Learned" Evaluation results AVGE = 4.5 out of possible 5.0.
- National Science Teachers Meeting, Boston MA "The Ultimate Challenge: Defy Gravity"
- Science Educators Workshop, "Detecting Radiation in our Radioactive World," Luncheon speaker, American Nuclear Society, Boston MA.
- Building Bridges Fall Keynote Speaker, a hands-on interactive engineering day for high school students, Northeastern University, Boston, MA.
- Sixth Annual Space Forum, Massachusetts Space Grant Consortium, Section Leader "ISS Commercial Utilization—how can we enhance it?, MIT Cambridge, MA.

2000

- Massachusetts Space Grant Consortium: Seminar 16.s26 "Modern Space Science & Space Engineering," "Research in Space and What it's Like to Live and Work in Low Earth Orbit".
- Panelist in a Public Broadcasting System production "International Space Station: Ventures in Space," an interactive, live satellite program, which was telecast to more than 500 sites across the country, Norfolk, VA.
- Keynote speaker for a "roast" of Dr. Larry DeLucas at the Southeastern Lions Club Humanitarian Award Banquet.
- NASA sponsored Morning TV interviews. "Zeolite Crystal growth and CAMMP activities" Interviews to 15 early-morning TV shows around the nation.
- Building Bridges Spring Keynote Speaker, a hands-on interactive engineering day for high school students, Northeastern University.

- TMS meeting (The Minerals, Metals & Materials Society) Connecticut Section, “Be an Astronaut; See the World-What’s it Really Like !”.
- Keynote speaker for the Teacher Leadership Academy of Massachusetts, “Research in Space and What its like to live and work in Low Earth Orbit”.
- Keynote speaker for Sapien Corporation, “Teamwork, Stress, Flying in Space, or Learning to Maintain an even Strain”.

2001

- Keynote speaker Boston University “The 2001 Center for Talented youth’s Career Symposium”.
- Keynote speaker for 2001: A Laboratory Odyssey 15th Annual Northeast Region Conference and Exhibition, sponsored by Clinical Laboratory Management. Association, clinical Ligand Assay Society and the American Association for Clinical Chemistry, “Living and Working in space from a Scientist’s Perspective” April 2001.

2002

- Opening speaker Engineering Materials Used In Demanding Environments, Northeastern University, Boston, MA

2003

- Fifteen interviews on 5 major networks and 10 radio stations on the Columbia Tragedy.
- “CAMMP Advanced Microgravity Materials Research Center” Emerging technologies Forum for F500 External Technology Directors Network, Northeastern University, Boston, MA.
- “Flying in the Space Shuttle. What is it like” Tampa Alumni Chapter Northeastern University, Tampa Fl.

2004

- “Training and Flying in Space on STS-73” MASC/MASS Conference Worcester MA, Keynote Speaker.
- “Be an Astronaut; See the World-What it’s really like!” Ankara Turkey, Middle Eastern Technical University, Guest speaker.
- “Performing Science in Low Earth Orbit: What is it like, what has been learned and what is the potential?” University of Alberta, Edmonton Canada seminar speaker.
- “Space the Final Frontier: What is it like to live and work in space?” New Jersey Institute of Technology, Newark NJ.
- “Be an Astronaut: See the world-What it’s really like. What science was done in space? What does the future hold for Chemistry in space?” The Tri state ACS, Alleghny College.
- “Be an Astronaut: See the world-What it’s really like. What science was done in space? What does the future hold for Chemistry in space?” The Tri state ACS, University of Akron, Akron OH.

2005

- “Chemical Engineering the Next 20 Years” AIChE regional meeting, Boston MA

2006

- “Be an Astronaut see the world, what’s it really like!” FRERI Italian American young professional group.
- “Living and Working in Space” Dante Alighieri Society (200 people).
- “Living and Working in Space” Department of Neighborhood Development’s Italian Heritage Month Luncheon, Boston MA.

2007

- “Be an Astronaut see the world, what’s it really like!” Woburn Historic Society

2009

- “Training for space flight, launch, doing science in space: What’s it like? Why do you do it?, What do you do next?”, Clarkson University Board of Trustees.

2011

- “Living and Working in Space...A Scientist’s/Teacher’s Perspective” Experimental Aircraft Association, Nov 7, 2011.

2012

- “Molding successful women Engineers” 2012 Society of Women Engineers Region C Conference, Lubbock, TX Jan. 28, 2012.

2013

- “A story of a space traveler”, Keynote, 2013 Science Festival, Museo de Arte de Puerto Rico, San Juan PR March 19, 2013.
- “So, you wanted to be an astronaut” Keynote, South West Municipal Waste Conference April 16, 2013.
- “A Space Adventure: Memories of an American Astronaut”, Dallas Count Community College District Conference, Dallas TX, Oct. 18, 2013.
- “The flight of STS-73-16 days in earth orbit” Lubbock Lion’s Club, Lubbock TX Oct. 22, 2013.

2016

- “How Texas universities are shaping the future of the industry”, Panel Discussion, Texas AE Industry Conference, Dallas TX Oct. 5, 2016

Community Outreach Presentations (All invited)

1992

- Connecticut Young Scholars, West Hartford CT.
- WPI Physics Colloquium, Worcester MA.
- President’s Advisory Council, Worcester MA.
- Advanced Space Design Program, Worcester MA.
- AIChE Student Chapter, Worcester MA.
- WPI Parents' Day, Worcester MA.
- Elm Park Elementary School, Worcester, MA.

- Varnum Elementary School, Lowell, MA.
- Quinsigamond Community College, Worcester MA.
- Worcester Rotary Club.
- Tau Beta Pi Initiation Ceremony, Worcester MA.
- Oakham School, Oakham, MA.

1993

- Beth Israel Brotherhood, Worcester MA.
- Venerini Academy, Worcester MA.
- Hartford Alumni, University of Hartford, Hartford CT.
- SIM Banquet, Worcester MA.
- WPI Business Women's Lunch.
- SME, Worcester MA.
- Columbus Park School, Grades 2 through 6, Worcester MA.
- Boy Scouts of America, Worcester MA.

1994

- Petersham Center School, Grades 1 through 6, Petersham MA
- Petersham School Department Workshop for Teachers, Petersham MA
- Rockport High School, Grades 9 through 12, Rockport MA
- North Shore Council of Mathematics Supervisors, Danvers MA
- Central Berkshire Regional School District SPACE Program, Dalton MA
- WPI Parents' Weekend, Worcester MA.
- Bancroft School, Grades 4 through 8, Worcester MA.
- Goddard School, Grades K through 6, Worcester MA.
- Mount View School, Grade 8, Holden MA.

1995

- Oakham Center School, Grade 4, Oakham MA.
- Maurice J. Tobin School, Northeastern University Tobin Scholars (Grade 6), Boston MA.
- Order of the Engineer Ring Ceremony, College of Engineering, Northeastern University, Boston MA.

1996

- The Bohemians, Worcester MA.
- Jacob Hiatt Magnet School, Grades 2 and 3, Worcester MA.
- Holden Extended Care Nursing Home, Holden MA.
- St. Patrick's Day Parade, Honorary Grand Marshall, Worcester MA.
- Duracell U.S.A, Lexington NC.
- Westchester Academy, Grades 1 through 12, High Point NC.
- Goddard School, Grades K through 6, Worcester MA.
- New Ludlow School, Grades K through 6, Worcester MA.

- Northeastern University, Students from four Boston High Schools and Tobin Scholars, Boston MA.
- WPI, Countdown to Tomorrow with STS-73 Crew, Worcester MA.
- Raytheon, Management Club, Andover MA.
- WPI's Family Weekend, Worcester MA.
- New Jersey Institute of Technology, Honors Colloquium Series - Spring, 1996
- Attica Schools, Grades 5 through 12, Attica NY.
- Le Roy Central Schools, Grades 5 through 12, Le Roy NY.
- Greendale People's Church, "Know Your World" Seminar Series, Worcester MA.
- WPI Board of Trustees, Spring Meeting of the Corporation, Worcester MA.
- Town of Holden, Sponsored by Holden Chamber of Commerce, Holden MA.
- "Dare to Dream" Presentation to Central Massachusetts Middle and High School students and teachers, Worcester MA.
- First Congregational Church, Shrewsbury MA.
- Thompson-Ames Historical Society, Gilford NH.
- Greendale Retired Men's Club, Worcester MA.

1997

- Marlboro Middle School, Grades 5 and 6, Marlboro MA.
- Holliston Middle School, Grade 5, Holliston MA.
- Fred Miller Elementary School, Grade 3, Holliston MA.
- Minuteman Technology High School, Grades 9 through 12, Lexington MA.
- Salem Rotary Club, Salem MA.
- Quaboag Nursing Home, West Brookfield MA.
- Paxton Center School, Grades 4, 5, 6, 7, and 8, Paxton MA.
- Nelson Place School, Grades 4 and 5, Worcester MA.
- Fox Hill Elementary School, Grades 4 and 5, Burlington MA.
- Worcester Housing Authority New Star Recognition Program, Worcester MA.
- Boston University Honors Program, Grade 12 students, Boston MA.
- Camp REACH, Grade 8 students, Worcester MA.
- Wyman-Gordon Management Club, Worcester MA.
- Astro Saucer Dedication, Newman Elementary School, Needham MA.
- Raytheon Management Club, Framingham MA.
- Florence Roche School, Grades 1 through 5, Astronaut Presentation Groton, MA.

1998

- Master's Tea, Keynote Speech, Astronaut Presentation, Yale University, New Haven CT.
- Raytheon Microelectronics Center's 1998 U.S. Savings Bond Drive Kick-off Meeting, Keynote Speaker, Raytheon, Andover MA.
- Quaboag Valley Chamber of Commerce, Keynote Speaker, Palmer MA.
- The Ichthyologists of Boston, Keynote Speaker, Haemonetics Corporation, Randolph MA.

- Mission HOME media Tour to include: Publicity interviews in Burlington VT, and Portland ME: WCAX-TV (CBS), WCSH-TV(NBC), WGME-TV (CBS), WPXT-TV (Fox), Community Leadership Roundtables in Portland and Burlington, and visits to Lawrence Barnes Elementary School, Burlington, University of Vermont, and Baxter Elementary Portland, ME.
- Station Elementary School., Grades 3 through 5, educational science presentation, "Science in Space-An Astronaut/Scientist's Perspective," South Yarmouth MA.

1999

- Flagg Street Elementary School, Reading is Fundamental Program, Worcester MA.
- St Paul's Elementary School, "What's it like to Fly in Space," Westerville OH.
- "Flying in Space: What is it really like?" Brooks School, North Andover MA.
- Joseph P. Keefe Technical School, "Space: What's it like? What Jobs are Available," Framingham MA.

2000

- REACH program, WPI Aug. 2000.
- Projecto Espacial 2000 sponsored by the Sociedade das Crianças (Society for the Children) Sao Paulo Brazil Oct. 2000, Two presentations to 400 students, visit two children's' hospitals, visited two large schools for troubled youths.
- The Charlton School, "What's it like to Fly in Space," Oct. 2000.
- Boston University, "Living and Working in Space from a Scientist, Engineer's, Teacher's Viewpoint," Keynote Speech, The Space and Astronomy Program for advanced high school students, Nov. 2000.
- Westford Academy, "Space Flight: What it is like to be an Astronaut," Dec. 2000.

2001

- Medical Associates Scientific Symposium 2001 Laboratory Odyssey - "Living and working in Space (a scientist's perspective)" April 2001.

2002

- Peter Woodbury School NH, 100 3rd graders "What it's like to fly in Space" April 2002.
- The Boston Latin Academy, 300 7th graders "living and working in Space" June 2002 Cambridge MA.
- Wellington School, 50 6th graders Belmont June 2002.

2003

- Fenn School - "Living and working in Space" Lexington MA.
- Universidad Metropolitana "Careers in Science and Engineering" 150 undergraduates sponsored by GISEI Program, School of environmental Affairs (SEA) Universidad Metropolitana Puerto Rico.
- "What it is like to fly in Space" 150 high school students, Puerto Rico.
- Universidad del Turabo "Science and Engineering Careers in the 21st Century" 100 Undergraduates, Puerto Rico.

- Nelson Place School, “What’s it like to be an Astronaut and fly in Space” 230 students from Grades 4-6, Worcester MA.
- WPI student Chapter of the AIChE, “Science in Space—the STS-73 Mission” Worcester MA.
- Sutton Elementary School, “What’s it like to be an Astronaut and fly in Space” 425 students from Grades 7,8 and 9th, Sutton MA.
- St Sebastian School, “Being and Astronaut and flying in Space: What’s it like” Grades 7-8th.

2004

- Flying in the Space Shuttle. What is it like, June 14th 2004 third grade class, Neighborhood House Charter School.
- Be an Astronaut; See the World- What it’s really like! Oct. 2004, Italian Heritage Month, Boston Public Library.
- Living and working in Space, May 2004, Lockheed-Martin and the American Institute of Aeronautics and Astronautics and Cedar Point Elementary School PTA, Bristow VA.
- What’s it like to be an Astronaut and fly in Space, March 2004, Lynch Middle School, Holyoke MA.
- What’s it like to be an Astronaut and fly in Space, Jan. 2004, Mathcounts is sponsored by the National Society of Professional Engineers, William Diamond Middle School, Lexington MA.
- Space the final frontier: What does NASA new exploration initiative mean to you? Dec. 2004.

2005

- Flying in the Space Shuttle. What is it like, Jan. 2005 NEU Sophomore Chemical Engineering class, Boston MA.
- “Flying in the Space Shuttle. What is it like” third grade class, Neighborhood House Charter School, May 10, 2005.
- Living and working in Space, March 24 & 25 2005, National Society of Black Engineers event for 100 high school students.
- “Space the final frontier: What’s it like to be an Astronaut” 5,6 8th graders Clark Avenue School Chelsea June 2005.
- “Flying in Space and NASA future plans for Manned space Flight”, Cape Cod Technology Council, July 2005, New Seabury (Mashpee) MA.

2006

- “Flying in the Space Shuttle. What is it like” Blue & Gold Banquet Cub pack 91, Feb. 3, 2006.
- Opening of the First contest at BU Meet greet and inspire all Competitors, March 25, 2006.
- “What’s it like to be an Astronaut and Fly in Space” Meet incoming and potential Chemical Engineering Sophomores, March 2006.

- “Be an Astronaut; See the world. What’s it really like.” J.J Lynch Middle school (300) students, Holyoke MA Dec. 2006

2007

- “Be an Astronaut: see the world-what’s it really like!” Meet incoming and potential Chemical Engineering Sophomores, March 2007.
- “What’s it like to be an Astronaut and Fly in Space” 2007 ExxonMobil Bernard Harris Summer Science Program sixth, seventh and eighth graders from the Greater Boston July 2007.
- *“What it’s like to fly in space, the training, discipline, and science”* Middlesbrough Schools one presentation to 200 Middle school students, UK.
- *“Be an Astronaut: see the world-What’s it really like!”* two presentations to middle school kids (total 310) Centre for Life, Newcastle on Tyne, UK Oct 2007.

2008

- “Be an Astronaut: see the world-what’s it really like!” March 2008, Meet incoming and potential Chemical Engineering Sophomores.
- “Be an Astronaut: see the world-What’s it really like!” ExxonMobil Bernard Harris Science Program for gifted sixth, seventh and eighth graders (100), July 2008, Boston MA.
- “Chemical Engineering in Space!” AIChE Chicago section 2 presentations to 400 High School students & Community College students, Sept. 2008 Chicago IL.
- “Performing Science in Space: What’s it like? What has been learned? and What is the potential? AIChE student organization, Nov 2008, Boston MA.

2009

- “Be an Astronaut: see the world-what’s it really like!” The Moswetuset Lodge, Order of the Arrow, Boston Minuteman Council, (200 scouts) Jan. 3, 2009, Quincy MA.
- “Science in Manned Space from a teacher, scientist and engineer’s perspective” Turkish Cultural Center, Boston MA.
- “What’s it like to fly in space...and why science and Engineering is fun!” Wellington School Star Party 6,7, 8th grade students, March 2009 Belmont MA.
- “Performing Science in Low Earth Orbit: What is it like? What has been learned? and What is the potential? Narragansett Region High School March 5, 2009.
- “Be an Astronaut: see the world-What’s it really like!” 2009 ExxonMobil Bernard Harris Summer Science Program for gifted sixth, seventh and eighth Graders (~100) July 2009.
- “Never let your fears get in the way of your dreams-career horizons in engineering and science” AIChE Chicago Section 2 presentations to 550 high school students & community college students, Sept. 2009.
- “Living and working in Space...a Scientist’s/Teacher’s Prospective” Clarkson University Space Day Oct. 2009.
- “Living and Working in Space; A Scientist’s, Engineers and /Teacher’s Perspective” Parents Day, Northeastern University, Oct. 2009.

2010

- “Space Flight, living and working in space”, 2010 ExxonMobilBernard Harris Summer Science Program for Gifted Sixth, seventh and eighth graders (~100).
- “Be an Astronaut: see the world-what’s it really like!” AIChE Chicago Section 2 presentations to 400/300 High School students & Community College students, Oct. 2010.
- “Never let your fears get in the way of your dreams”, Honors Convocation Whitacre College of Engineering, (~100), Dec. 2010.

2011

- “Never let your fears get in the way of your dreams”, Honors Convocation Whitacre College of Engineering, (~150) Dec. 2011.
- “Ethics yesterday and today”, National Institute of Engineering Ethics” Texas Tech University, May 17, 2011.
- “Autumn’s dawn: Cowboy and Aliens or Living and Working in Space...Wow is this weird...but FUN!” Gala fundraiser for the Autumn’s Dawn Foundation for Autism, Houston TX Fall 2011.
- “Living and Working in Space...and growing potatoes AND all that stuff you learn in GEAR 2011!” (500+ students and parents) Opening competition for GEAR, Fall 2011.
- “Never let your fears get in the way of your dreams-career horizons in engineering and science” AIChE Chicago Section 2 presentations to 300 High School students & Community College students, Nov. 10 & 11, 2011.
- “The Whitacre College of Engineering: A community of scholars...*more than just a group of individuals*” 6 Alumni groups in Dallas, Midland and Houston TX.

2012

- “Living and Working in Space...A Scientist’s/Teacher’s Perspective” Metropolitan Lubbock Rotary Club, Lubbock TX Jan. 6, 2012.
- “Living and Working in Outer Space: Perspectives of a Chemical Engineer” Texas Public Works Association, Lubbock TX Feb.13, 2012
- “Living and Working in Outer Space: Perspectives of a Scientist, Engineers and Educator” Osher Lifelong Learning Institute, Lubbock TX Feb. 14, 2012.
- “Achieving in life” Honors College Senior Banquet Texas Tech University, May 25, 2012.
- “The key to success: Innovate, Preserve and take Risks” Terry Scholars Foundation Dinner, Oct. 2012.
- “Training and working in space...an engineer’s and Teacher’s prospective” Military Officers of America, Nov. 6, 2012 Lubbock TX.
- “Working & Living in Space” Yeditepe University, Istanbul Turkey Dec. 5, 2012.
- “United States Microgravity Lab II: Living and working in low earth orbit” University of Surrey, London England Dec. 2012.

2013

- “Chemical Engineering in Space” 5th Annual AIChE Midwest Regional Conference Chicago, IL, 2 presentations to about 300 High School kids, Jan. 31, and Feb. 1, 2013.
- “Adventures in science and engineering...take the risk!” 2013 TAME South Plains Math and Science Competition, Feb. 23, 2013.
- “A chemical engineer living and working in space” 2013 Southwest AIChE Regional Conference Awards Banquet” Keynote speaker, 200 students from 7 universities in the southwest region, March 23, 2013.
- “Living and Working in Space...Wow is this awesome...but FUN!” Tawonga and Mt. Beauty Community presentation, Mt. Beauty, Australia.
- “Living and Working in Space...Wow is this weird...but FUN!” Mt. Beauty public library for 90 elementary school students and their parents, Mt. Beauty, Australia.

2014

- “A Space Adventure...Memories of an American Astronaut!” South Crest Christian School, Lubbock TX, Jan. 14, 2014.
- “What’s it like to train and live and work in space ...AND building MoonPost 2014!!!!” (600+ students and parents) Opening meeting for GEAR, Lubbock, TX, Spring 2014.
- “Space Flight: The training, the adventure, the risk, the advancements...memories of an Astronaut” (100+ graduate students) Recinto Universitario de Mayaguez, Universidad de Puerto Rico and Universidad Politécnica de Puerto Rico, March 4 & 5, 2014.
- “A Space Adventure: Memories of an American Astronaut” (100+ high school and middle undergraduate students) Universidad de Talca, Santiago Chile and Pontificia Universidad Católica de Valparaiso, Valparaiso Chile March 24 & 27, 2014.
- “Space Flight: *What’s it really like*...memories of an Astronaut” (200+ high school students) AIChE Spring Meeting, New Orleans April 4, 2014.
- “Training and Flying in Space—What is it really like from an astronaut’s perspective” Kiwanis Club, Lubbock Texas April 17, 2014.

2015

- “Never let your fears get in the way of your dreams-career horizons in engineering and science” Chicago AIChE Student Forum March 2015.
- “A Global Perspective: An astronaut’s view on international experiences” Texas Tech University International Week Lubbock Texas April 2015.
- “Never let your fears get in the way of your dreams...one man’s journey to the stars” AIChE Spring Student meeting Lubbock Texas April 2015.
- “Never let your fears get in the way of your dreams...one man’s journey to the stars” Texas Tech University’s summer research experience Lubbock Texas June
- “A Space Adventure: Memories of an American Astronaut” Universidad Católica del Norte, Antofagasta Chile Dec 3, 2015.

2016

- “Never let your fears get in the way of your dreams” AIChE Spring Outreach at Rice (two presentations) April 2016.

- “Never let your fears get in the way of your dreams” Tulane
- University high school outreach (two presentations) April 2016.
- “Never let your fears get in the way of your dreams” Texas Tech University College of Arts’ & Sciences’ Annual Chemistry and Biochemistry Awards Ceremony, Keynote Speaker Texas Tech University April 3, 2016.

2017

- “Never let your fears get in the way of your dreams...one man’s journey to the stars” Tulane University high school outreach (two presentations), New Orleans, Louisiana, January 2017
- “Never let your fears get in the way of your dreams - one man’s journey to the stars” University of Puerto Rico, Mayaguez, Puerto Rico, February 2017
- “Never let your fears get in the way of your dreams” Hutchinson Middle School Lubbock, Texas, February 2017
- “Never let your fears get in the way of your dreams” All Saints Episcopal Middle and High School (2 presentations) Lubbock, Texas, February 2017
- “Never let your fears get in the way of your dreams - one man’s journey to the stars” Institute for the Promotion of Teaching Science and Technology, Bangkok, Thailand, August 2017
- “Space the final frontier...What’s it like? What have we learned?” (3 presentations) Chicago, Illinois, November 2017
- iLaunch Competition - Spark Conference, Lubbock, Texas, April 2017
- “Careers in Science and Engineering” WCOE Society of Women Engineers Outreach Event Valparaiso, Chile, May 2017

2018

- “Never Let Your Fears Get in the Way of Your Dreams...One Man’s Journey to the Stars” Tulane University High School Outreach (two presentations), New Orleans, LA, January 2018.
- “Never Let Your Fears Get in the Way of Your Dreams...” Hutchinson Middle School, Lubbock, TX, March 3, 2018.
- “Never Let Your Fears Get in the Way of Your Dreams...” (3 presentations) Chicago, IL, November 2018.
- “Engineering a Global Future – Building a Better World Together” TTU-CR, Costa Rica, September 2018.
- “Into Orbit – Living and Working in Space, the Training, the Flight and the Benefits” First Robotics, Chicago, IL, 2018.

2019

- ISPS International Building Symposium Opening Keynote, July 17, 2019.
- Chasing the Moon screening; Opening talk, Alamo Drafthouse, Lubbock, TX, June 19, 2019.

- Keynote Speaker for 2019 Leaders On Campus Unlocking Potential (LOC UP) Conference, Lubbock, TX, February 2, 2019.

PROFESSIONAL ACTIVITIES

Professional Societies Activities

- Symposium Co Chairman, 1981, North American Catalysis Society Meeting, Boston, MA, "Reaction Engineering and Catalyst Deactivation."
- Publicity Chairman, 1981, North American Catalysis Society Meeting.
- Symposium Co Chairman, 1982 National AIChE Meeting, Anaheim, CA, "Catalysis and Catalyst Deactivation."
- Symposium Co Chairman, 1984 National AIChE Meeting, Anaheim, CA, "Catalyst and Adsorbent Deactivation," and "Catalyst/Support Interactions."
- Co Chairman (with Prof. Gary Hallar), 1984, New England/New York Catalysis Societies' Annual Spring Symposium, Yale University, CT.
- Symposium Chairman, 1985, 17th Biennial Conference on Carbon, Lexington, Kentucky, "Carbon As An Adsorbent."
- Co Chairman (with Prof. W. Moser), 1985, Second Research Symposium of the Catalysis Society of New England, WPI, Worcester, MA.
- Chairman, 1986, Third Research Symposium of the Catalysis Society of New England, WPI, Worcester, MA.
- Co Chairman (with Prof. Alvin H. Weiss), 1987, International Carbon Conference, WPI, Worcester, MA.
- Member of the IAA Committee on Advanced Materials Processing
- Organized the symposiums: "Materials Processing in Varying Gravity Environments- Globally Interactive" (50th International Aeronautical Federation, IAF, Congress).
- Panel Discussion, "Role of the Scientist-Astronaut in Materials Research on the International Space Station" (50th IAF Congress)
- Symposium Co-Chair (with Sharon Cobb), "Materials Research on the International Space Station" Space Applications and Applications International Forum (STAIF), Feb. 2, 2000.
- Symposium Co-Chair (with Karen McNamara), "Material Science: Produced/Used in Space" AIChE Annual Meeting April 2001.
- Symposium Co-Chair The International Symposium on Zeolites and Microporous Crystals, Summer 2006.
- Member AIChE Research and New Technology Committee (RANTC).2008-2012
- Advisory Board Member, AIChE International Society for Water Solutions 2012-
- Session Chair "AIChE/A&WMA joint workshop on Shale oil and Gas E&P-Water Challenges and Opportunities" Session II Water Treatment, November
- 2012.
- Conference Co-Chair and organizing committee STAR TECH 2019, Boston, MA, November 19, 2019.

Other Service

- Chairperson - Microgravity Materials Sciences (In-Situ Resource Utilization Panel, NRA-98-HEDS-05).
- Chairperson – Advanced Human Support Technology Panel (Physical and Chemical Regeneration, NRA 99-HEDS.)
- Chairperson -Bio Plex Review Team. The Bio Plex is a NASA Test bed to evaluate planetary missions.
- Served as outside NASA 's representative to an Intergovernmental task force to set the program For the Nations efforts in research and education at the interface between the life sciences and physical sciences.
- Served as committee member of NASA IRT-Evaluation of International Space Station management and policies as a national laboratory.

PROPOSALS

1. "An Investigation of Filamentous Growth on Transition Metals During Carbon Deposition," NSF (Eng. Res. Initiation Grant), 1978, Accepted: \$25,000.
2. "An Investigation of the Initiation and Growth Mechanisms of the Filamentous Form of Coke," NSF (Continuation), 1979, Accepted: \$79,000.
3. "Residual Life Method for Determining Gas Protection of ASC Whetlerite Carbon Beds," DOD, 1980, Accepted: \$60,000.
4. Science Faculty Professional Development Award, NSF/GTE, \$22,000, 1981, Accepted (Program Canceled Before Money Received).
5. "Residual Life Method For Determining Gas Protection of ASC Whetlerite Carbon Beds," DOD, 1982, Accepted: \$100,000.
6. "Residual Life Method for Determining Gas Protection of ASC Whetlerite Carbon Beds," DOD, 1983, Accepted: \$90,000
7. Travel Award Grant, NSF, 1984 (For Berlin Catalysis Society Meeting), Accepted: \$1,000.
8. "An Investigation of the Initiation and Growth Mechanisms of Filamentous Coke over Iron, Nickel, Cobalt, and Their Alloys," NSF, 1985, Accepted: \$133,000.
9. "The Effect of Preoxidation of Ilmenite on the Rate and Extent of Reduction," NASA, 1985, Accepted: \$1,500.
10. "Iron Production From Ilmenite: Feasibility Studies Using Lunar Simulants," Space Studies Institute, 1985, Accepted: \$6,950.
11. "Center for the Development of Commercial Crystal Growth in Space," Clarkson University (with A. G. Dixon, R. W. Thompson), Accepted: \$275,000.
12. "Kinetics of Ilmenite Oxidation and Reduction," NASA, 1987, Accepted: \$160,000.
13. "An Investigation of the Initiation and Growth Mechanisms of Filamentous Carbon Over Transition Metals," NSF, 1988, Accepted: \$160,000.
14. "Zeolite Growth in Space for Reaction/ Separators II," Battelle/NASA (with A. G. Dixon and R. W. Thompson), 1989, Accepted: 758,500.

15. "Large Zeolite Growth in Microgravity," Clarkson University, 1989, Accepted: \$644,476.
16. Equipment Proposal, NASA, 1989, Accepted: \$40,000.
17. "NASA/U.S. Microgravity Laboratory-1 Mission," Battelle/NASA, 1990, Accepted: \$467,970.
18. "Zeolite Molecular Sieves for Simultaneous Reaction and Separation," Battelle/NASA, 1994, Accepted: \$264,000.
19. "United States Microgravity Laboratory (USML-2) Payload Specialist," NASA, 1994, Accepted: \$468,317.
20. "Zeolite Crystal Growth on USML-2," NASA, 1994, Accepted: \$1,328,762.
21. "Radius Zeolites/USML-2," Delft University of Technology, 1995, Accepted: \$16,000.
22. "Modeling of Macroscopic/Microscopic Transport and Growth Phenomena in Zeolite Crystal Solutions Under Microgravity," NASA, 1996, Accepted: \$183,000
23. Commercial Space Center "Center for Advanced Microgravity Material Processing," Accepted 9/97 (\$16,408,000).
24. "Modeling of Macroscopic/Microscopic Transport and Growth Phenomena in Zeolite Crystal Solution under Microgravity Conditions," Accepted \$322,000.
25. "Study of Defect Type and Concentration on Silver Bromide Crystals", Polaroid Corp. \$50,000.
26. STARS (Stimulating Teachers in Academic Research through Space) Massachusetts Space Consortium, Accepted \$15,000.
27. "The study of Hydrogen Storage in Single tube Nano-fibers" Intek Corp. \$100,000.
28. "Evaluation of single Tube Nano Filaments from Hall Thrusters", Busek Corp. \$40,000.
29. "Develop a Reconfigurable Masking Technology Based on Carbon Nanotubes for High-Rate Nanomanufacturing," Co-PI NASA, \$74,570
30. International Research Staff Exchange Scheme: Biosensors from Nanomaterials, contributor \$500,000 European Commission
31. "Multifunctional Materials for Chem./Bio Defense" PI Triton systems, \$30,000

Total Research Monies Awarded to Date (9/15): \$24,202,050

ACADEMIC EXPERIENCE

WPI

1977/78

| | | | |
|---|---------|-------------------------|-------------|
| Fall Semester: | CM 561 | Graduate Thermodynamics | 22 students |
| Spring Semester: | ES 3002 | Mass Transfer | 70 students |
| Supervised 5 MQP students; 2 MQPs completed | | | |
| Supervised 2 MS students | | | |

Graduate Seminar CM 501

1978/79

| | | | |
|----------------|--------|-------------------------|-------------|
| Fall Semester: | CM 561 | Graduate Thermodynamics | 14 students |
|----------------|--------|-------------------------|-------------|

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|---|---------|------------------------------|-------------|
| | CM 581 | Graduate Solid Gas Reactions | 2 students |
| Spring Semester: | CM 2102 | Undergraduate Thermodynamics | 70 students |
| Supervised 6 MQP students; 3 MQPs completed | | | |
| Supervised 2 MS students; 1 MS completed | | | |
| Graduate Seminar | CM 501 | | |

1979/80

| | | | |
|---|---------|------------------------------|-------------|
| Fall Semester: | CM 581 | Graduate Solid Gas Reactions | 10 students |
| Spring Semester: | CM 2102 | Undergraduate Thermodynamics | 75 students |
| Supervised 11 MQP students; 5 MQPs completed | | | |
| Co supervised 4 IQP students; 1 IQP completed | | | |
| Supervised 3 MS students; 2 MS's completed | | | |
| Graduate Seminar | CM501 | | |

1980/81

| | | | |
|--|---------|----------------------------------|-------------|
| Fall Semester: | CM 561 | Graduate Thermodynamics | 15 students |
| | CM 3401 | Unit Operations (Lab. Assistant) | |
| Spring Semester: | CM 2102 | Undergraduate Thermodynamics | 70 students |
| Supervised 5 MQP students; 3 MQPs completed | | | |
| Co supervised 6 IQP students; 2 IQPs completed | | | |
| Supervised 3 MS students; 1 MS completed | | | |

1981/82

| | | | |
|--|---------|------------------------------|-------------|
| Fall Semester: | CM 561 | Graduate Thermodynamics | 12 students |
| Spring Semester: | CM 2102 | Undergraduate Thermodynamics | 65 students |
| Supervised 4 MQP students; 3 MQPs completed | | | |
| Co supervised 9 IQP students; 2 IQPs completed | | | |
| Supervised 3 MS students; 2 MS completed | | | |

1982/83

| | | | |
|---|---------|------------------------------|-------------|
| Fall Semester: | CM 561 | Graduate Thermodynamics | 10 students |
| Spring Semester: | CM 2102 | Undergraduate Thermodynamics | 73 students |
| Co supervised 5 IQP students; 1 IQP completed | | | |
| Supervised 2 PhD students | | | |
| Supervised 1 MS student | | | |

1983/84

| | | | |
|---|---------|------------------------------|-------------|
| Fall Semester: | CM 561 | Graduate Thermodynamics | 17 students |
| Spring Semester: | CM 2102 | Undergraduate Thermodynamics | 55 students |
| Co supervised 4 MQP students; 1 MQP completed | | | |
| Supervised 1 IQP student; 1 IQP completed | | | |
| Supervised 2 PhD students | | | |
| Supervised 1 MS student | | | |

1984/85

| | | | |
|----------------|--------|-------------------------|-------------|
| Fall Semester: | CM 561 | Graduate Thermodynamics | 12 students |
|----------------|--------|-------------------------|-------------|

Spring Semester: CM 2102 Undergraduate Thermodynamics 43 students
Supervised 3 MQP students; 1 MQP completed
Supervised 1 IQP student
Co supervised 7 MQP students; 1 MQP completed
Co supervised 6 IQP students; 2 IQPs completed
Supervised 3 PhD students
Supervised 1 MS student

1985/86

Fall Semester: CM 561 Graduate Thermodynamics 4 students
Spring Semester: CM 2102 Undergraduate Thermodynamics 43 students
Supervised 10 MQP students; 4 MQPs completed
Supervised 1 IQP student; 1 IQP completed
Supervised 3 PhD students, supervised 1 MS student

1986/87

Fall Semester CM 561 Graduate Thermodynamics 14 students
Spring Semester: CM 2102 Undergraduate Thermodynamics 41 students
Supervised 4 MQP students; 2 MQPs completed
Supervised 3 PhD students; 1 PhD completed
Supervised 3 MS students; 1 MS completed

1987/88

Fall Semester: CM 561 Graduate Thermodynamics 11 students
Spring Semester: CM 2102 Undergraduate Thermodynamics 28 students
Supervised 1 MQP student; 1 MQP completed
Supervised 7 IQP students; 1 IQP completed
Supervised 3 PhD students
Supervised 3 MS students

1988/89

Fall Semester: CM 509 Solid Gas Reactions 6 students
Spring Semester CM 2102 Undergraduate Thermodynamics 37 students
Supervised 7 MQP students; 3 MQPs completed
Supervised 12 IQP students; 4 IQPs completed
Supervised 3 PhD students
Supervised 4 MS students; 3 MS completed

1989/90

Fall Semester CM 561 Graduate Thermodynamics 10 students
Supervised 3 MQP students; 1 MQP completed
Supervised 4 IQP students; 1 IQP completed
Supervised 5 PhD students
Supervised 1 MS student

1990/91

On leave of absence; I did not teach any courses.
Supervised 4 MQP students; 2 MQs completed
Supervised 7 IQP students; 3 IQPs completed
Supervised 2 PhD students; 2 PhD completed
Supervised 2 MS students; 2 MS completed

1991/1992

| | | | |
|----------------|---------|-------------------------|-------------|
| Fall Semester: | CM 561 | Advanced Thermodynamics | 6 students |
| | CM 3801 | Industrial Chemistry | 29 students |
| | CM 4401 | Unit Operations I | 40 students |

Supervised 6 IQP students
Supervised 2 PhD students
Supervised 2 MS students; 1 MS completed

1992/1993

| | | | |
|----------------|--------|-------------------------|------------|
| Fall Semester: | CM 561 | Advanced Thermodynamics | 6 students |
|----------------|--------|-------------------------|------------|

Supervised 3 IQP students; 1 IQP completed
Supervised 2 PhD students; 1 PhD completed
Supervised 2 MS students

1993/1994

| | | | |
|----------------|---------|-------------------------|-------------|
| Fall Semester: | CM 561 | Advanced Thermodynamics | 13 students |
| | CM 4401 | Unit Operations I | 42 students |

Supervised 4 MQP students; 1 MQP completed
Supervised 9 IQP students; 2 IQPs completed
Supervised 1 PhD student
Supervised 4 MS students

1994/1995

On leave of absence; did not teach any classes.
Supervised 2 IQP students; 1 IQP completed
Supervised 5 MS students; 2 MS completed
Supervised 1 PhD student

1995/1996

On leave of absence; did not teach any classes.
Supervised 2 MS students

1996/1997

| | | | |
|------------------|---------|--------------------|-------------|
| Fall Semester: | CM 4402 | Unit Operations II | 58 students |
| | CM 501 | Graduate Seminar | 23 students |
| Spring Semester: | CM 543 | Molecular Sieves | 3 students |

Supervised 4 MQP students
Supervised 1 directed research student
Supervised 4 MS students
Supervised 1 PhD student
Graduate seminar CM 501.

Northeastern University

1997/1998

Winter Quarter: CHE 3340 Heterogeneous Catal. 12 students
Summer Quarter (1997): Honors Project: Acidity of Zeolite Beta
Supervised 2 undergraduate students on senior projects
Supervised 5 MS students

1998/1999

Fall & Winter Quarter: CHE 3670 Special Topics: Introduction to X-Ray Diffraction & Electron Microscopy Theory and Practice, Part I & II 9 students
Winter & Spring Quarter: CHE 3691 Seminar 21 students
Spring Quarter: CHE 3310 Graduate Thermodynamics 21 students
Supervised 1 undergraduate student on a senior project
Supervised 5 MS and 6 PhD students

1999/2000

Fall, Winter & Spring Quarter: CHE 3691 Seminar 17 students
Spring Quarter: CHE 3340 Heterogeneous Catalysis 21 students
Supervised 1 undergraduate student on a senior project
Supervised 5 MS and 6 PhD students

2000/2001

Fall, Winter & Spring: CHE 3691 Graduate Seminar 15 students
Spring: CHE 3310 ChE Eng. Thermo 14 students
Supervised 2 undergraduate student on a senior project
Supervised 7 MS and 6 Ph'D students

2001/2002

Fall, Winter & Spring: CHE 3691 Graduate Seminar 15 students
Spring: CHE 3310 Heterogeneous Catal. 14 students
Supervised 3 undergraduate student on a senior project
Supervised 4 MS and 5 PhD students

2002/2003

Fall, Winter & Spring: CHE 3691 Graduate Seminar 20 students
Spring: CHE 3310 Heterogeneous Catal. 21 students
Supervised 7 undergraduate student on co-op
Supervised 4 MS and 5 PhD students

2003/2004

Fall, Winter & Spring: CHE 3691 Graduate Seminar 25 students
Spring: CHE 3310 Heterogeneous Catal. 21 students
Supervised 3 undergraduate student on co-op
Supervised 2 MS and 7 PhD students

2004/2005

| | | | |
|--|----------|------------------|-------------|
| Fall & Spring: | CHE G390 | Graduate Seminar | 23 students |
| | CHE G330 | Grad Thermo. | 12 students |
| Summer: | CHE G260 | Special Topics | 2 students |
| Supervised 3 undergraduate student on a senior project | | | |
| Supervised 2 MS and 5 PhD students | | | |

2005/2006

| | | | |
|--|----------|------------------|-------------|
| Fall & Spring | CHE G390 | Graduate Seminar | 23 students |
| Fall | CHE G330 | Grad. Thermo. | 4 students |
| Supervised 3 undergraduate student on a senior project | | | |
| Supervised 2 MS and 3 PhD students | | | |

2006/2007

| | | | |
|--|----------|-----------------------|-------------|
| Fall & Spring: | CHE G390 | Graduate Seminar | 29 students |
| Fall: | CHE G330 | Grad. Thermo | 19 students |
| | CHE G220 | Unit Operations (1/4) | 10 students |
| Supervised 2 undergraduate student on a senior project | | | |
| Supervised 5 MS and 4 PhD students. | | | |

2007/2008

| | | | |
|--|----------|-----------------------|-------------|
| Fall & Spring: | CHE G390 | Graduate Seminar | 32 students |
| Fall: | CHE G330 | Grad. Thermo. | 11 students |
| | CHE G220 | Unit Operations (1/4) | 15 students |
| Supervised 2 undergraduate student on a senior project | | | |
| Supervised 2 MS and 3 PhD students | | | |

2008/2009

| | | | |
|------------------------------------|----------|-------------------|-------------|
| Fall & Spring: | CHE G390 | Graduate Seminar | 32 students |
| Fall: | CHE G330 | Grad. Thermo. | 13 students |
| Spring: | CHE U322 | Undergrad. Thermo | 29 students |
| Supervised 6 MS and 4 PhD students | | | |

2009/2010

| | | | |
|------------------------------------|----------|------------------|-------------|
| Fall & Spring: | CHE G390 | Graduate Seminar | 36 students |
| Fall | CHE G330 | Grad. Thermo. | 15 students |
| Supervised 2 MS and 2 PhD students | | | |

Undergraduate Student Projects-Completed***WPI--Major Qualifying Projects*** (senior technical thesis WPI)

1. John W. Messer, Jr. "Formulation of Triangular Phase Diagrams" 1978.
2. Richard J. Roscito "Microwave Conversion of Methane to Acetylene" 1978.
3. John Haponik and Robert G. Rock, Jr. "The Effect of Thermal Treatment on Coal Morphology" (with Y. H. Ma) 1979.

4. Robert F. Mizula "Determination of the Micropore Surface Area of Thermally Treated Coal Samples with Methanol Adsorption," 1979 (with Y. H. Ma).
5. Charles Close, Raymond Dimuzio, and David Szhutak "The Design and Construction of an Operational System for the Fischer Tropsch Synthesis" 1979.
6. Barbara J. Krystyniak and John W. Podlenski "An Investigation of the Fischer Tropsch Synthesis over Iron Catalyst" 1980.
7. John Moriarty and John Sjostedt "A Study of the Reduction of Iron Oxide Disks" 1980.
8. Todd Brennan and Michael Kuczynski "Three Factors of Influence on the Hydrocarbon Pulse Test" 1980.
9. David S. Lesser, Anthony A. Masullo, and Patricia M. Monterio "Encapsulation of Sulfur in Grinding Wheels" (with Dr. Charles Rue from Norton Co.) 1980.
10. Paul W. Farineau, Jr. "Formulation of Phase Diagrams" 1980.
11. Vance P. Spillman "Hydrocarbon Pulse Gas Testing to Determine Residual Protective Life of Carbon Beds" 1981.
12. Edward Crivello and Brita Nelson "Methane and Carbon Dioxide Formation during Fischer Tropsch Synthesis" 1981.
13. Richard F. Condon, Jr., and Richard A. Darcy "Sample Preparation for Carbon Fiber Growth Experimentation" 1981.
14. John A. Scholl "Carbon Deposition on Vapor Deposited Films of Iron" 1982.
15. Peter M. Sullivan "Experiments in Thermodynamics" 1982.
16. Caryn F. Mee and Maria M. Melanson "Solid Gas Equilibrium for the CHOS System" 1982.
17. David Collette, Kenneth Dieselman, John Crowley, and Alan S. Feitelberg "Zeolite Crystal Growth in The Microgravity Environment Aboard the Space Shuttle" (with L. B. Sand) 1984
18. Michael Hering and Carl Sheeley "A Study of Filamentous Carbon Growth" 1985.
19. Joyce F. Cutting, Lori S. Freeman, Yau Shing Lee, and Mey Ying Than "Zeolite Crystal Growth in the Microgravity Environment Aboard the Space Shuttle" 1985 (with L. B. Sand and R. W. Thompson).
20. Randall A. Briggs "The Effects of Preoxidation on the Rate and Extent of Reduction of Ilmenite" 1986.
21. Mary T. Allen, Lori-Ann Cody, Robin A. Gately "Preparation and Characterization of Thin Films of Transition Metals and Their Alloys" 1986.
22. Katherine A. Bolton, Cheryl A. Lucier, Dominick J. Peraro, Christie K. Wopschall "Zeolite Crystal Growth in the Microgravity Environment Aboard the Space Shuttle" 1986.
23. R. Ortwein "A Study of Filamentous Carbon Growth on Cobalt Foils" 1987.
24. K. Biernacki, E. Engwall, and W. Williams "Three-Dimensional Surface Generation of Solid Gas Phase Equilibria in the C H O S System," (with A. G. Dixon) 1987.
25. Andrew A. Aberdale "Preparation of Thin Disc Pellet for Ilmenite Kinetic Study" 1989.
26. Christopher F. Bozzini, Kenneth A. Hamilton, and Mark W. Napiany "The Products of Ilmenite Oxidation" 1989.

27. Cheryl M. Church, Susan E. Shorey, and Lee J. Sullivan "Carbon Deposition Studies on Cobalt at 800 K" 1989.
28. Michelle D. Petkers "Preparation of Ni Co Alloys by Electrochemical Co-deposition" 1990.
29. Russell A. Flugel and Arthur G. Gorneau "Carbon Filament Growth on Iron Loaded Supports at 1000 K and 1 atm" 1991.
30. Jeffrey M. Brenneke, Karen A. Chmielewski, Sarah C. Glow "An Analysis of the Mixing of Zeolite X Solution in Autoclaves Designed for a USML-1 Space Shuttle Mission" 1991.
31. Chad Denham, Wayne Maceyka, Pete Pakenas, Graham Rippel "Zeolite Crystal Growth" (with W. W. Durgin) 1994.
32. T. Sacco and L. Whalen "Separation of Zeolite Beta Polymorphs" 1997.
33. T. Landry and J. Warner "The Synthesis of Nanophase Alumina Stabilized Zirconia" (with R. Sisson) 1997.

Interactive Qualifying Projects (projects that relate technology to its impact on society, WPI):

1. Mark J. Burzynski, Peter K. Day, David W. Schedin, Peter C. Tiziani "A Proposal for a Technology Studio in the Museum Education Dept. at Old Sturbridge Village" (with Roy Rosenzweig) 1979.
2. Gary Baier, Lynn Gustafson, R. James Nunn, Timothy Roughan, Richard Tolle Waterpower Studio at Old Sturbridge Village, Sturbridge, MA" (with Timothy Meager) 1981.
3. Lawrence F. Donohue, Jr. "The Lyceum Lecture System and 19th Century Scientific Experiments in Electricity and Magnetism" (with Timothy Meagher) 1981.
4. Donald K. Montgomery, Anne R. Saunders, and Debra R. Weinstein "Progressive Agriculture in the 1830's and the Fanning Mill as a Representative Implement" 1982.
5. Carol M. Chapin, David A. Mongilio, and Brian M. Witkowski "The Straw Hat Industry in New England in the Early Nineteenth Century," (with Timothy Meagher) 1983.
6. Susan Leslie and Sunmi Yim "Kitchens of the 1930's" (with Timothy Meagher) 1983.
7. Sheldon Williams Dean III "An Examination of a Blacksmithing Business During the Industrial Revolution" (with Peter Onuf) 1984.
8. Maureen O'Brien, Robert Piper, and Edward Sofio "The Role of Biographic, Economic and Legal Issues in the Development of Water Power Technology" (with Cathy Matson) 1985.
9. Maria Kaliontzis, Roberta A. Klisiewicz, and Sophia Xanthopoulos "Cider Making in Nineteenth Century New England with Emphasis on the Social, Economic, and Technological Issues" (with Cathy Matson) 1985.
10. Randall Briggs "Environmental Considerations and Waste Planning on the Lunar Surface" 1986.
11. Scott M. Reed "The Effects of Scuba on Underwater Archaeology" 1988.
12. Dana J. Katinas, Kyle Petersen, and Michael S. Sullivan "Orbital Debris A Growing Concern" 1989.

13. David F. Botros, Thomas H. Jutras, and Anthony Pallotta "Identifying Critical Technologies" 1989.
14. Andrew A. Aberdale and David P. Smith "The Effects of the U. S./International Space Station Freedom on Technology Used In Industry" 1989.
15. Lee J. Sullivan "Superconductor Usage as an Emerging Technology in the U. S. Army" 1989.
16. Stephen A. McCurdy, Paul A. Rocheleau, Enis Vlashi "Preservation of Marine Artifacts" 1990.
17. Jeffrey Kaminsky and Paul Ross "The Impact of Modern Diving Technology on the Inspection and Maintenance of Marine Structures" 1991.
18. Steven B. Dulin, Roger J. Kahl, Jr., Kwok-hung Cheung "Can a Lunar Base Effort Develop Photovoltaic Alternatives to Fossil Fuels?" 1991.
19. Christopher M. Dalton and Christopher A. Walton "The Effect of Marine Salvage Technology on Society" 1991.
20. John M. Adelman, Lorenzo Bailey, Jeffrey F. Escott "Astronauts and Space Travel" 1993.
21. Steve Konicki and Patrick J. Sullivan "Long Duration Space Mission: Mars Consortium" (with A. G. Dixon) 1995.
22. Patrick Gallagher, Archangelo Mariano, Francis Parnin, Kirsty Reidy "Utilization of Mars Base Technologies for Deserts," (with A. G. Dixon) 1994.

Preliminary Qualifying Projects:

1. Joyce Trela "A Computer Analysis of Humidity Effects of Air Filters".

Northeastern University

Honors Projects (undergraduates)

1. Dana Alexander and Alin Moss "Acidity of Zeolite Beta" Spring 1998.
2. Karin Carlsson "Modeling of Zeolite Crystallization from Clear Solution" Spring 1999.
3. Suzanne L. Stuhler "Synthesis of Zeolite ZK-5 for Potential Use as Hydrogen Storage Medium" Spring 2000.
4. Ayoh L. Kouli "Investigation on the effect of Stainless Steel Surface and Temperature on Synthesis of Zeolite Sr, K ZK-5" Summer 2000.

MS Theses Completed (WPI and Northeastern)

1. Sheng Lung Lien "The Modeling of the Reduction of Iron Oxide with Hydrogen and Carbon Monoxide Mixtures"
2. Binny Chung "Hydrocarbon Pulse Testing for Collective Filters"
3. Yelda Aksoy "Determination of the Catalytic Properties and the Life Capacity of Protective Charcoal Filters"
4. John Caulmare "Preliminary Results on the Initiation and Growth Mechanism of Filamentous Coke"

5. Pradeep Thacker "Detailed Investigation of the Initiation and Growth Mechanism of Filamentous Coke"
6. Janet Hammarstrom "Residual Life Method for Determining Gas Protection of ASC Whetlerite Carbon Beds"
7. Fred Geurts "Filamentous Carbon Deposition over Nickel and Cobalt Foils"
8. Julie D'Itri "Phase Separation in Zeolite Na A Synthesis Mixtures: Preliminary Investigations to Microgravity Experimentation"
9. Randy Briggs "Examination of the Hydrogen Reduction Mechanisms of Ilmenite"
10. Soohan Lee "Generation of the Theoretical (FeNi), (NiCo), and (CoFe) Phase Diagrams For H_2 -CO- CH_4 - CO_2 - H_2O Reacting Systems"
11. Robin Gately "Homogeneous Alloy Foils of Iron, Cobalt, and Nickel Prepared by ElectroDeposition"
12. Susan Shorey "Investigation of the Rate and Morphology of Carbon Deposition Over Fe, Co, and Ni"
13. Shun Ke Ho "Effect of G-Jitter Vibration on Zeolite NaA Batchwise Synthesis"
14. Kenneth Hamilton "Factors Affecting the Nucleation of Zeolite X"
15. Mike Fulcher "Nutrient Addition in Zeolite A Reaction Systems"
16. Sandra Velez "Encapsulation of Cadmium Sulfide Semiconductors in Zeolite X"
17. Hans van Dongeren "Electro-Optic Interferometry for Study of Carbon Deposition on Transition Metal Surfaces: Preliminary Results"
18. Ji Chen "The Effect of Sulfur on Carbon Deposition Over a Transition Metal Catalyst by Magnetic Measurement"
19. Ipek Guray "Formation of MCM-22 Under Static and Stirring Reaction Conditions"
20. Penny Russell "Synthesis of Zeolite ZK-5 for use as a Hydrogen Storage Medium"
21. Reidun R. Vold "Growth and Characterization of Cubic Silver Bromide Crystals With 2-Methyl-Imidazole"
22. Xiaohui Yao "Formation of Nanocrystalline Zeolite A"
23. Samia Ferchiche "Investigation of the Size and Morphology of Zeolite L Synthesized in the Presence of Different Alkaline Metal Cations"
24. Daniella Bottari "The Heterogeneous Meerwein-Ponndorf-Verley Reduction of Ketones with Secondary Alcohols Utilizing Zeolite Beta Catalyst in Solution"
25. Karin Carlsson "Modeling of Zeolite Crystallization from Clear Solution"
26. Seyda Dumrul "Synthesis of ZSM-5 zeolite films on gold surfaces modified by zirconium-phosphonate multilayers"
27. Patrick Engel (with Kate Ziemer) "Development of a Biosensor for the Detection of Ethylene in the Plant Growth Environment"
28. Yunmei Shen "Synthesis of Zeolite Y Nanocrystals from Clear Solutions"
29. Delphine Teboule "Synthesis of Zeolite Y Nanocrystals from Clear Solutions"
30. Bilge Yilma "Synthesis of Titanosilicate ETS-4 with Controlled Characteristics"
31. Zhaoxia Ji "Effect of Synthesis Parameters and Seeding on ETS-10 Nucleation and Growth"
32. Servet Nadirler (with Nurcan Bac) "Characterization of Composite Membranes for Polymer Electrolyte Fuel Cell Applications"

33. Michael Walters “Hydrothermal Synthesis of ETS-10 Films Supported on Non-seeded and Pre-seeded Porous and Non porous Substrates”
34. Vatsala Sadasivan (with Rebecca carrier) “Molecular Modeling of the Human Intestinal Mucin (MUC2) for Drug Transport Study”
35. Jonathan Gar-Sing Long (with Kate Ziemer) “Controlled Growth of Uniform Diameter Multi-walled Carbon Nanaotube Arrays Via Chemical Vapor Deposition for Application in Field Emission Devices”
36. Eko Pandowo (with Kate Ziemer) “Investigation on In-situ Growth of Carbon Nanotube Network by Chemical Vapor Deposition for Electrical Interconnect Applications”
37. Onnaz Ozkanat Electron Transport Mechanism of Titania Chains in the Framework of Titanosilicates ETS-4 and ETS-1”

PhD Theses Completed (WPI and Northeastern)

1. Janet Hammarstrom "Investigation of Reactivity and Deactivation Mechanism of ASC Whetlerite Charcoal"
2. Gregory Jablonski "Interferometric Measurement of the Surface Tension of Group VIII Transition Metals to Predict Surface Enrichment of Foils"
3. Randall Briggs "Oxidation and Reduction of Ilmenite and the Reduction of Pseudobrookite"
4. Fred Geurts "Investigation of the Effect of <FeNi> and <FeCo> Alloy Composition of the Deposition of Filamentous Carbon"
5. Ozgur Karahan “Chiral Separations Using Zeolite Beta”
6. Hong Wei Song (with Olusegun Iiegbusi) “Multi-scale Transport Phenomena in Solution Growth of Zeolite Crystals”
7. Burcu Akata “Characterization of Acidity in Zeolite Beta”
8. Stephane Bazanna “Investigation on the Uniform Growth of Multiwall Carbon Nanotubes in a Chemical Vapor Deposition Process”
9. Bilge Yilmaz “Quantum Wires in ETS-4”
10. Siricharn S. Jirapongphan “Molecular Modeling of Separation of Chiral Compound in CHIRAL-Modified Zeolite HY”
11. Zhaoxia Ji “Synthesis and Engineering of Titanosilicate ETS-10 for Enhanced Photocatalytic Activity in an Optical Fiber Reactor”
12. Mariam N. Ismail “Synthesis and Bandgap Engineering of Vanadosilicate AM-6 for Photocatalytic Applications”

University Service

WPI

- Blue Ribbon Committee, 1992-1993
- WPI's Trustees Review Commission, 1989 1990
- Dean of Graduate Studies Advisory Committee, 1988
- Provost Search Committee, 1988 1991
- At Large Tenure Committee, 1985 1989; Chair, 1988 1989
- Freshman Advisor, 1985 1997

- Committee on Graduate Study and Research, 1983 1986
- AD HOC Faculty Club Committee, 1985 1986
- Awards Committee, 1979 1981
- Committee on Academic Operations, 1979 1981; Secretary, 1980 1981
- Faculty Advisor to Sigma Phi Epsilon Fraternity, 1979 1983
- Department Committees, 1977 to 1997:
 - Graduate Committee
 - Undergraduate Committee
 - Five-Year Plan Committee

NORTHEASTERN UNIVERSITY

- Chairman, IAB Seminar program with Prof. Katherine Stewart Ziemer's (2009)
- Chairman, Prof. Katherine Stewart Ziemer's Tenure and Promotion Committee (2007/8)
- College of Engineering Tenure and Promotion Committee, Member 2008
- Northeastern University 's Research Council (1997 to present)
- Chemical Engineering Graduate Co-coordinator (1997 to present)
- Chemical Engineering Faculty Search Committee, (member 1998, Chair 1999-2007)
- College of Engineering Sabbatical Leave Committee (Academic year 1990-2000; 2000-2001)
- College of Engineering Trustees Professorship Search Committee (1999-2000)
- Chemical Engineering Department Head Search Committee, (Chair 2000-2006)
- The Provost Search Committee (2001-2002)
- Chairman of Prof Carolyn Lee-Parsons' Tenure and Promotion Committee(2004)
- Chairman Prof Gilda Barabino's Promotion Committee (2004)
- Serve as a member of the Ad Hoc Research Policy Oversight Committee (2004)