

Curriculum Vitae

EVGENY SHAFIROVICH

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The University of Texas at El Paso
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EDUCATION

Ph.D. Chemical Physics Institute of Chemical Physics Russian Academy of Sciences	1988
M.S. Mechanical Engineering Moscow Aviation Institute, Russia	1981

PROFESSIONAL EXPERIENCE

Professor	<i>September 2017 – Present</i>
Associate Professor	<i>September 2014 – August 2017</i>
Assistant Professor	<i>September 2010 – August 2014</i>
Research Assistant Professor Department of Mechanical Engineering University of Texas at El Paso El Paso, TX	<i>October 2008 – August 2010</i>
Research Scientist School of Chemical Engineering Purdue University West Lafayette, IN	<i>April 2004 – October 2008</i>
Research Engineer Laboratoire de Combustion et Systèmes Réactifs Centre National de la Recherche Scientifique Orléans, France	<i>September 2002 – March 2004</i>
Research Associate Department of Chemical Engineering University of Notre Dame Notre Dame, IN	<i>January 2000 – September 2002</i>
Scientist, then Senior Scientist Institute of Structural Macrokinetics and Materials Science Russian Academy of Sciences Chernogolovka, Moscow, Russia	<i>January 1988 – January 2000</i>
Engineer, then Junior Scientist Institute of Chemical Physics Russian Academy of Sciences Chernogolovka, Moscow, Russia	<i>July 1981 – December 1987</i>

AWARDS AND HONORS

UTEP ORSP, For Outstanding Efforts in Securing Extramural Funding, 2017, 2016, 2015, 2012
 UTEP BUILDing SCHOLARS, For Excellence in Student Research Mentoring, 2016
 "First Place for Technical Merit" Award, Combustion Art Competition, Spring Technical Meeting of the Central States Section of the Combustion Institute, Tulsa, OK, 2014
 AIAA Associate Fellow, 2013
 DOE FaST Summer Fellowship, Lawrence Livermore National Laboratory, 2011
 DOE FaST Summer Fellowship, Argonne National Laboratory, 2009
 Technology of the Year Award, *Industry Week*, 2005
 Research Fellowship of Conseil Régional Centre, France, summer 1999
 NATO Fellowship for Scientific and Technological Research, France, 9/1998 – 6/1999
 CNRS Fellowship for Exchange Visitors, France, summer 1997

RESEARCH INTERESTS

Combustion of energetic and gas-generating materials
 Combustion synthesis of advanced materials
 Utilization of space resources

CONSULTING

AVOX Systems, Zodiac Aerospace, 6/2014 – 8/2014, 8/2017 – 10/2017
 Purdue University, 10/2008 – 2/2009

SPONSORED RESEARCH

Active Projects

1. E. Shafirovich (PI), "Instrumentation for Studies on Combustion and Decomposition of Energetic Materials," DoD, 9/1/2017 – 8/31/2018, \$509,575
2. E. Shafirovich (PI – UTEP), "STTR I: Metal Production away from Earth," NASA, Prime Offeror: Lynntech Inc., 9/1/2017 – 6/8/2018, \$32,160
3. E. Shafirovich (PI), A. Choudhuri (Co-PI), "IRES: US - Canada Collaborative Research on Combustion of Metals as Clean Energy Carriers," NSF, 8/15/2017 – 7/31/2020, \$249,965
4. E. Shafirovich (PI), J. Chessa (Co-PI), "Computational Design and Combustion Synthesis of Niobium Silicide-Based Composites," DoD, 8/1/2017 – 7/31/2020, \$449,754 (plus \$140,971 cost share), 8/1/2017 – 7/31/2020

5. E. Shafirovich (PI), S. Cordova (NASA Space Technology Research Fellow), "Combustion Synthesis of Thermoelectric Materials for Deep Space Exploration," NASA, 8/1/2017 – 7/31/2018, \$65,052 for Year 1, renewable for up to 4 years
6. A. Choudhuri (PI), N. Love (Co-PI), J. Chessa (Senior Investigator), E. Shafirovich (Senior Investigator), "Technology Demonstration of a High Pressure Swirl Oxy-Coal Combustor," DOE, 10/1/2016 – 9/30/2019, \$1,200,000 (plus \$300,000 cost share)
7. E. Shafirovich (PI), R. Ferguson (NASA Harriett G. Jenkins Graduate Fellow), "Combustion Joining of Regolith Tiles for the In-Situ Fabrication of Landing/Launching Pads," NASA, 9/1/2016 – 8/31/2018, \$100,000
8. E. Shafirovich (PI), C.V. Ramana (Co-PI), "Combustion Synthesis of Boride-Based Electrode Materials for MHD Direct Power Extraction," DOE, 10/1/2015 – 9/30/2018, \$250,000
9. A. Choudhuri (PI), J. Chessa (Co-I), N. Love (Co-I), E. Shafirovich (Co-I), R. Wicker (Co-I), "MIRO Center for Space Exploration and Technology Research," NASA, 8/1/2015 – 7/31/2020, \$5,000,000 (plus \$4,350,003 cost share)
10. N. Love (PI), A. Choudhuri (Co-PI), E. Shafirovich (Co-PI), "HAN Based Advanced Hybrid Rocket Motor Technologies," Missile Defense Agency, 4/13/2015 – 4/12/2018, \$589,795

Completed Projects

The University of Texas at El Paso

11. E. Shafirovich (PI), "High Energy Chemical Reactions for Potential Space Power," NASA Jet Propulsion Laboratory, California Institute of Technology, 6/2/2017 – 9/4/2017, \$15,000
12. E. Shafirovich (PI), "Investigation of Factors that May Increase Oxidation of Tin Powders," B/E Aerospace Inc., 7/1/2015 – 9/30/2015, \$39,966
13. E. Shafirovich (PI), "Energetic Materials Laboratory," DoD, 2/1/2014 – 1/31/2015, \$499,930
14. A. Choudhuri (PI), V. Kumar (Co-PI), N. Love (Co-PI), H. Meeuwssen (Co-PI), C. Ramana (Co-PI), E. Shafirovich (Co-PI), "Low Carbon Energy Engineering Doctoral GAANN Fellowship," U.S. Department of Education, 8/2012 – 8/2015, \$405,315
15. E. Shafirovich (PI), "Mechanically Activated Combustion Synthesis of MoSi₂-Based Composites," DOE, 7/1/2012 – 9/30/2015, \$200,000 (plus \$36,000 cost share)
16. E. Shafirovich (PI), "Efficient and Safe Chemical Gas Generators with Nanocomposite Reactive Materials," DoD, 2/13/2012 – 8/31/2015, \$620,000
17. C.V. Ramana (PI), E. Shafirovich (Co-PI), "Gallium Oxide Based Nanostructures for High-Temperature Oxygen Sensors in Fossil Energy Systems," DOE, 10/1/2011 – 12/31/2014, \$200,000
18. E. Shafirovich (PI), "Oxygen Candle Chemistry Evaluation," Jacobs Technology, 7/1/2010 – 9/23/2010, \$30,991
19. A. Choudhuri (PI), D. Borrok (Co-I), C. Carrasco (Co-I), J. Chessa (Co-I), L. Everett (Co-I), J. Hurtado (Co-I), C. Ramana (Co-I), E. Shafirovich (Co-I), "Center for Space Exploration Technology Research," NASA, 10/1/2009 – 3/31/2015, \$4,999,618
20. E. Shafirovich (PI), "Reaction Mechanisms in Solar/Nuclear Thermochemical Hydrogen Production," University Research Institute Program, 9/1/2009 – 8/31/2010, \$5,000

Purdue University

21. A. Varma (PI), E. Shafirovich (Co-PI), "The Potential for Underground Coal Gasification in Indiana," Center for Coal Technology Research, 2008-2009
22. A. Varma (PI), R. Chen (Co-PI), A. Hsu (Co-PI), E. Shafirovich (Co-PI), "Hydrogen Fuel Cell Power Systems for Portable Applications," Purdue – IUPUI Intercampus Applied Research Program, 2008-2009
23. A. Varma (PI), R. Agrawal (Co-PI), W.N. Delgass (Co-PI), J.A. Morgan (Co-PI), D. Ramkrishna (Co-PI), F.H. Ribeiro (Co-PI), E. Shafirovich (Co-PI), "Research and Development of Alternative Energy Sources," Fred L. Hartley Foundation, 2007-2008
24. J.P. Gore (PI), R.A. Kramer (Co-PI), P.V. Ramachandran (Co-PI), A. Varma (Co-PI), E. Shafirovich, et al., "Purdue Hydrogen Technology Program," DOE, 2006-2008
25. A. Varma (PI), E. Shafirovich (Co-PI), "Novel Chemical Mixtures for Hydrogen Generation," Trask Technology Innovation Awards Program, 2005-2006
26. A. Varma (PI), E. Shafirovich (Co-PI), "Ignition and Combustion of Single Complex Metal Particles under Reduced Gravity Conditions," NASA, 2004-2006

CNRS, France

27. I. Gökalp (PI), C. Chauveau, E. Shafirovich, "Combustion Mechanisms of Aluminum Nanoparticles," SNPE, 2003-2004
28. I. Gökalp (PI), E. Shafirovich, "Metal-CO₂ Propulsion System for Mars Missions," European Space Agency, 2003-2004

University of Notre Dame

29. A. Varma (PI), A. Mukasyan, E. Shafirovich, "Combustion Mechanisms of Complex Metal Particles," NSF, 2002-2006
30. A. Varma (PI), A. Mukasyan, E. Shafirovich, "Mechanisms of Combustion Wave Propagation in Low-Exothermic Heterogeneous Systems with Gaseous Products," Petroleum Research Fund of the American Chemical Society, 2001-2004
31. A. Varma (PI), A. Mukasyan, E. Shafirovich, "Mechanistic Studies of Chlorate Combustion Reactions," B/E Aerospace, Inc., 2000-2002

Russian Academy of Sciences

32. I. Gökalp (Project Coordinator and French Team Leader), D. Meinköhn (German Team Leader), E. Shafirovich (Russian Team Leader), A.N. Zolotko (Ukrainian Team Leader), "Ignition and Combustion of Powdered Aluminum and Magnesium under Normal and Reduced Gravity," INTAS and European Space Agency, 2000-2002
33. R. Eckhoff (Project Coordinator and Norwegian Team Leader), V. Rosenband (Israeli Team Leader), E. Shafirovich (Russian Team Leader), A.N. Zolotko (Ukrainian Team Leader), "Combustion of Single Metal Particles and Metal Particle Clouds," INTAS, 1997-2000
34. U. Goldshleger and E. Shafirovich, "Studies on Combustion of Magnesium Particles and their Suspensions in Gases," International Science Foundation, 1994-1995

TEACHING

- MECH 2311 *Introduction to Thermal-Fluid Sciences* (Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014)
- MECH 3312 *Thermodynamics* (Fall 2010, Fall 2012, Spring 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017)
- MECH 3376 *Thermodynamics II* (Spring 2009, Fall 2009)
- MECH 4315 *Heat Transfer* (Spring 2015, Fall 2015, Spring 2016)
- MECH 4316 *Thermal System Design* (Spring 2012)
- MECH 4395/5390 *Special Topics in Mechanical Engineering: Renewable Energy* (Spring 2010)
- MECH 5210 *Advanced Thermodynamics* (Fall 2013, Fall 2017)
- MECH 5335 *Aerospace Propulsion / ESE 6314 Energy Systems Engineering* (Fall 2014)
- ESE 6316 *Sustainable Energy* (Fall 2011)

STUDENT ADVISING

The University of Texas at El Paso

Advisor and PhD Dissertation Committee Chair

- Ashvin Kumar Narayana Swamy (PhD Aug. 2013)
Experimental study on the fabrication of advanced materials for energy applications using high energy mechanical milling
- Armando Delgado (PhD Dec. 2016)
Magnesium-based combustion synthesis of advanced materials for energy and space applications
- Alan Esparza (Sep. 2016 – present)
Sergio Cordova (June 2017 – present)
Reina Trevino (Sep. 2017 – present)

Advisor and M.S. Thesis Committee Chair

- Atul Ambhore (M.S. Dec. 2009)
The effect of air addition on plasma-based reforming of methane and propane
- Allen Garcia (M.S. Aug. 2011)
On feasibility of reducing metal fuel content and operating temperatures in chemical oxygen generators

Francisco Álvarez (M.S. Dec. 2011)

Combustion of lunar regolith mixed with energetic additives: Thermodynamic calculations and experimental studies

Christopher White (M.S. Dec. 2011)

Experimental investigation of magnesium/regolith combustion for in-situ production of materials on the Moon

Armando Delgado (M.S. Dec. 2012)

Combustion and compaction of lunar regolith/magnesium mixtures

Jorge Frias (M.S. Dec. 2012)

On the extraction of volatiles from lunar regolith using solar power

Marco Machado (M.S. Dec. 2013)

Nanocomposite and mechanically alloyed reactive materials as energetic additives in chemical oxygen generators

Mohammad S. Alam (M.S. Aug. 2014)

Combustion synthesis of molybdenum silicides and borosilicides for ultrahigh-temperature structural applications

Daniel Rodriguez (M.S. Aug. 2014)

Hydrogen generation from ammonia borane and water through the combustion reactions with mechanically alloyed Al/Mg powder

Alan Esparza (M.S. May 2016)

Mechanically activated combustion synthesis of molybdenum borosilicides for ultrahigh-temperature structural applications

Sergio Guerrero (M.S. May 2016)

Combustion of novel thermite mixtures for iodine generation

Sergio Cordova (M.S. May 2017)

Mechanically activated magnesiothermic combustion synthesis of zirconium and hafnium diborides

Robert Ferguson (June 2016 – present)

Gabriel Llausas (July 2017 – present)

Ralph Vargas (July 2017 – present)

Edgar Maguregui (Sep. 2017 – present)

PhD Dissertation Committee Member

Vishwanath Reddy Ardha (PhD May 2012)

Mario Ruvalcaba (PhD May 2012)

Arturo Acosta-Zamora (PhD Dec. 2016)

Martin A. De la Torre (PhD Dec. 2016)

Luis E. Sanchez (PhD Dec. 2016)

M.S. Thesis Committee Member

Jonathan A. Meyer (M.S. May 2012)
 Marco E. Quiroz-Regalado (M.S. Aug. 2015)
 Gabriel R. Trujillo (M.S. Aug. 2015)
 Rachel A. Slank (M.S. May 2016)

Advisor of Undergraduate Student Researchers at UTEP

Francisco Álvarez (Jan. 2009 – Dec. 2009)
 Christopher White (Nov. 2009 – Dec. 2009)
 Armando Delgado (Nov. 2009 – Dec. 2010)
 Jorge Frias (Nov. 2009 – Dec. 2010)
 Joseph Hernandez (Nov. 2009 – Dec. 2010)
 Mario Rubio (Nov. 2009 – Dec. 2010)
 Izrael Lopez (June 2013 – Dec. 2013)
 Carlos Contreras (Sep. 2013 – Dec. 2013)
 Martin Passauer (DAAD Intern from Germany, summer 2014)
 Jose Mendez (May 2014 – Dec. 2014)
 Sergio Cordova (June 2014 – May 2015)
 Arturo Catalan (Sep. 2015 – May 2016)
 Robert Ferguson (Jan. 2016 – May 2016)
 Leonardo Gutierrez Sierra (May 2016 – Dec. 2016)
 Rodrigo Mesta (Sep. 2017 – present)

Advisor of UTEP Students at DOE National Laboratories

Francisco Álvarez (Argonne National Laboratory, summer 2009)
 Marco Machado (Lawrence Livermore National Laboratory, summer 2011)
 Jose Luis Mena (Lawrence Livermore National Laboratory, summer 2011)
 Daniel Rodriguez (Lawrence Livermore National Laboratory, summer 2011)

Advisor of UTEP Students in NASA's Microgravity Programs

Experiments onboard reduced gravity research aircraft, NASA Johnson Space Center:

1. Evaluation of Exothermic Welding in Reduced Gravity (2011)
 Jorge Frias (team leader)
 Eric Anchondo
 Alberto Delgado
 Armando Delgado
 Mario Rubio
2. The Effect of Gravity on the Production of Structural Materials from Lunar Regolith (2011)
 Christopher White (team leader)
 Francisco Alvarez

Alan Alvillar
 Colin Davis
 Armando Delgado
 Jorge A. Frias

3. Combustion Mechanisms of Lunar Regolith/Magnesium Mixtures (2012)

Steven Ambriz (team leader)
 Alan Alvillar
 Sergio Guerrero
 Jonel Ortiz
 Jonathan Torres

4. Combustion of Lunar and Martian Regolith Simulants with Magnesium (2013)

Israel Lopez (team leader)
 Christian Amezcua
 Jaime Campero
 Edgardo Flores
 Heimdall Mendoza

5. Microgravity Effects on Autonomous Airborne Microbial Monitors (2013)

Arturo Acosta-Zamora (team leader)
 Isaac Cereceres
 Kimberly Hogge
 Jose Luis Mena
 Ashley Rivas
 Alejandra Vargas

6. Magnetic Cleaning Device for Lunar Regolith (2014)

Sergio Cordova (team leader)
 Edgardo Flores
 Gabriel Garay
 Miriam Paez
 Sara Soto

Experiments in the Neutral Buoyancy Laboratory, NASA Johnson Space Center:

7. Asteroid Sample Grabber (2015)

Esteban Salcedo (team leader)
 Stephanie P. Garfield
 Ember Sikorski
 Michael Torres
 Max Winter

8. Rock Chip Sampling Device for Asteroid Missions (2016)

Steven Torres (team leader)
 Colton Caviglia
 Leonardo Gutierrez Sierra

Reina Trevino

9. Pneumatic Tool for Subsurface Sampling (2017)

Cesar Acosta (team leader)

Hussam Alzateemehg

Luis Antonio Codina

Alejandro Contreras

Briana Laura Moreno

Jareny Santiesteban

Advisor for Student Sections of Professional Societies

AIAA Student Branch at UTEP (2014 – present)

ASME Student Chapter at UTEP (2010 – 2014)

Advisor for Senior Design Projects

Spring 2010 (1 team)

Fall 2010 (1 team)

Fall 2011 (1 team)

Fall 2012 (2 teams)

Fall 2013 (1 team)

Fall 2014 (1 team)

Spring 2015 (2 teams)

Purdue University, West Lafayette, IN, USA

Co-Advisor and Thesis Committee Co-Chair for graduate students:

Soon-Kay Teoh (M.S. 2006)

Timothy A. Andrzejak (Ph.D. 2007)

Moiz Diwan (Ph.D. 2009)

Advised postdocs:

Dr. Sambandan Ekambaram (2004-2005)

Dr. Victor Diakov (2004-2006)

Advised a visiting Ph.D. student from Italy:

Michela Medde (Spring 2007)

Advised undergraduate students:

Nitesh Jain (2004-2005)

Brian Giera (2006-2008)

Unique Luna (summer 2007, summer 2008)

University of Notre Dame, IN, USA

Advised a PhD student:

Changjun Zhou (2001-2002)

Centre National de la Recherche Scientifique, Orléans, France

Advised PhD students:

Benjamin Legrand (1997-1999)

Pablo Escot Bocanegra (2002-2004)

Advised undergraduate students:

Michael Salomon (2002-2003)

Stéphanie Paulmier (2002-2003)

David Poulin (2002-2003)

Céline Vallee (2002-2003)

SERVICE

UTEP Committees/Services

Member, Search Committee for the Dean of the College of Engineering, 2015 – 2017

Chair, Department's Energy and Manufacturing Faculty Search Committee, 2015 – 2016

Member, Faculty Council of the College of Engineering, 2014 – 2017

Liaison between the Department and the University Library, 2013 – present

Member, UTEP Faculty Senate's Research Committee, 2012 – 2015

Member, Department's Committee on the Development, Integration, and Management of Thermal-Fluids Courses Content, 2011 – present

Member, Department's Thermal-Fluids / Energy Faculty Search Committee, 2011 – 2012

Member, College of Engineering Energy-Water Nexus Faculty Search Committee, 2010 – 2011

Membership in Professional Societies

Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA)

Member, AIAA Space Resources Technical Committee (2010 – present)

Member, AIAA Propellants & Combustion Technical Committee (2005 – 2013)

Member, American Institute of Mechanical Engineers (ASME)

Member, Combustion Institute (US Central States Section)

Member, Materials Research Society (MRS)

Membership in Editorial Boards

Associate Editor, International Journal of Energetic Materials and Chemical Propulsion

Reviewer for Journals

Acta Astronautica
Advances in Space Research
Aerospace Science and Technology
AIChE Journal
Applied Energy
ASME Journal of Solar Energy Engineering
ASME Journal of Thermal Science and Engineering Applications
Chemical Engineering and Technology
Chemistry of Materials
Combustion and Flame
Combustion Science and Technology
Combustion Theory and Modeling
Energy and Fuels
Environmental Science and Technology
Industrial and Engineering Chemistry Research
Intermetallics
International Journal of Energetic Materials and Chemical Propulsion
International Journal of Hydrogen Energy
International Journal of Sustainable Energy
Journal of Aerospace Engineering
Journal of Aircraft
Journal of Alloys and Compounds
Journal of Combustion
Journal of Energetic Materials
Journal of Environmental Chemical Engineering
Journal of Hazardous Materials
Journal of Materials Science
Journal of Propulsion and Power
Materials and Design
Materials Science in Semiconductor Processing
Nano Letters
Powder Technology
Proceedings of the Combustion Institute
Proceedings of the Royal Society A
Progress in Energy and Combustion Science
Solar Energy
The Journal of Physical Chemistry

The Journal of Physical Chemistry Letters

Reviewer of Research Proposals

National Science Foundation
U.S. Army Research Office
Oak Ridge Associated Universities
Fonds de recherch  du Qu bec – Nature et technologies (FRQNT)
University Research Institute Program, UTEP
Dodson Research Grants, UTEP
Diana Natalicio Dissertation Completion Fellowships, UTEP
COURI Awards, UTEP

Conference Organization

Session Chair, 10th US National Combustion Meeting, April 23-26, College Park, MD
Program Committee Member, 1st International Conference on Combustion Science and Processes, April 4-6, 2016, Prague, Czech Republic
Session Chair, 9th US National Combustion Meeting, May 17-20, 2015, Cincinnati, OH
Program Committee Member, 10th International Symposium on Special Topics in Chemical Propulsion & Energetic Materials, June 2-6, 2014, Poitiers, France
Session Chair, 2014 Spring Technical Meeting of the Central States Section of The Combustion Institute, March 16-18, 2014, Tulsa, OK
Session Chair, 12th International Symposium on Self-propagating High-temperature Synthesis, October 21-24, 2013, South Padre Island, TX
Session Chair, 8th US National Combustion Meeting, Park City, UT, May 19-22, 2013
Program Chair, 3rd Southwest Energy Science and Engineering Symposium, April 27, 2013. El Paso, TX
Session Chair, 51st AIAA Aerospace Sciences Meeting, January 7-10, 2013, Grapevine, TX
Session Chair, 49th AIAA Aerospace Sciences Meeting, January 4-7, 2011, Orlando, FL
Session Chair, 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 8-11, 2007, Cincinnati, OH
Session Chair, 5th US National Combustion Meeting, March 25-28, 2007, San Diego, CA
Session Chair, 44th AIAA Aerospace Sciences Meeting, January 9-12, 2006, Reno, NV
Reviewer, numerous conferences of the Combustion Institute, AIAA, and ASME

PUBLICATIONS

Peer-reviewed Journal Articles

1. Esparza, A.A., and Shafirovich, E., "Mechanically Activated Combustion Synthesis of Molybdenum Borosilicides for Ultrahigh-Temperature Structural Applications," *Journal of Alloys and Compounds*, Vol. 670, 2016, pp. 297-305.
2. Delgado, A., Cordova, S., Lopez, I., Nemir, D., and Shafirovich, E., "Mechanically Activated Combustion Synthesis and Shockwave Consolidation of Magnesium Silicide," *Journal of Alloys and Compounds*, Vol. 658, 2016, pp. 422-429.
3. Guerrero, S.E., Dreizin, E.L., and Shafirovich, E., "Combustion of Thermite Mixtures Based on Mechanically Alloyed Aluminum-Iodine Material," *Combustion and Flame*, Vol. 164, 2016, pp. 164-166.
4. Delgado, A., Cordova, S., and Shafirovich, E., "Thermite Reactions with Oxides of Iron and Silicon during Combustion of Magnesium with Lunar and Martian Regolith Simulants," *Combustion and Flame*, Vol. 162, 2015, pp. 3333-3340.
5. Rodriguez, D.A., Dreizin, E.L., and Shafirovich, E., "Hydrogen Generation from Ammonia Borane and Water through Combustion Reactions with Mechanically Alloyed Al-Mg Powder," *Combustion and Flame*, Vol. 162, 2015, pp. 1498-1506.
6. Alam, M.S., and Shafirovich, E., "Mechanically Activated Combustion Synthesis of Molybdenum Silicides and Borosilicides for Ultrahigh-Temperature Structural Applications," *Proceedings of the Combustion Institute*, Vol. 35, 2015, No. 2, pp. 2275-2281.
7. Machado, M.A., Rodriguez, D.A., Aly, Y., Schoenitz, M., Dreizin, E.L., and Shafirovich, E., "Nanocomposite and Mechanically Alloyed Reactive Materials as Energetic Additives in Chemical Oxygen Generators," *Combustion and Flame*, Vol. 161, 2014, pp. 2708-2716.
8. Frias, J., Shafirovich, E., and VanWoerkom, M., "Extraction of Volatiles from Lunar Regolith Using Solar Power," *Journal of Thermophysics and Heat Transfer*, Vol. 28, 2014, No. 2, pp. 343-346.
9. Narayana Swamy, A.K., and Shafirovich, E., "Conversion of Aluminum Foil to Powders that React and Burn with Water," *Combustion and Flame*, Vol. 161, 2014, pp. 322-331.
10. Delgado, A., and Shafirovich, E., "Towards Better Combustion of Lunar Regolith with Magnesium," *Combustion and Flame*, Vol. 160, 2013, pp. 1876-1882.
11. Álvarez, F., White, C., Narayana Swamy, A.K., and Shafirovich, E., "Combustion Wave Propagation in Mixtures of JSC-1A Lunar Regolith Simulant with Magnesium," *Proceedings of the Combustion Institute*, Vol. 34, 2013, pp. 2245-2252.
12. Álvarez, F., Delgado, A., Frias, J., Rubio, M., White, C., Narayana Swamy, A.K., and Shafirovich, E., "Combustion of Thermites in Reduced Gravity for Space Applications," *Journal of Thermophysics and Heat Transfer*, Vol. 27, 2013, No. 3, pp. 576-583.
13. Narayana Swamy, A.K., Shafirovich, E., and Ramana, C.V., "Synthesis of One-dimensional Ga₂O₃ Nanostructures via High-Energy Ball Milling and Annealing of GaN," *Ceramics International*, Vol. 39, 2013, pp. 7223-7227.

14. Shafirovich, E., Garcia, A., Narayana Swamy, A.K., Mast, D.J., and Hornung, S.D., "On Feasibility of Decreasing Metal Fuel Content in Chemical Oxygen Generators," *Combustion and Flame*, Vol. 159, 2012, pp. 420-426.
15. White, C., Alvarez, F., and Shafirovich, E., "Combustible Mixtures of Lunar Regolith with Metals: Thermodynamic Analysis and Combustion Experiments," *Journal of Thermophysics and Heat Transfer*, Vol. 25, 2011, No. 4, pp. 620-625.
16. Ferrandon, M.S., Lewis, M.A., Alvarez, F., and Shafirovich, E., "Hydrolysis of CuCl_2 in the Cu-Cl Thermochemical Cycle for Hydrogen Production: Experimental Studies Using a Spray Reactor with an Ultrasonic Atomizer," *International Journal of Hydrogen Energy*, Vol. 35, 2010, pp. 1895-1904.
17. Diwan, M., Hanna, D., Shafirovich, E., and Varma, A., "Combustion Wave Propagation in Magnesium/Water Mixtures: Experiments and Model," *Chemical Engineering Science*, Vol. 65, 2010, pp. 80-87.
18. Shafirovich, E., and Varma, A., "Underground Coal Gasification: A Brief Review of Current Status," *Industrial and Engineering Chemistry Research*, Vol. 48, 2009, pp. 7865-7875.
19. Andrzejak, T.A., Shafirovich, E., and Varma, A., "On the Mechanisms of Titanium Particle Reactions in O_2/N_2 and O_2/Ar Atmospheres," *Propellants, Explosives, Pyrotechnics*, Vol. 34, 2009, pp. 53-58.
20. Andrzejak, T.A., Shafirovich, E., and Varma, A., "Ignition of Iron-Coated and Nickel-Coated Aluminum Particles under Normal- and Reduced-Gravity Conditions," *Journal of Propulsion and Power*, Vol. 24, No.4, 2008, pp. 805-813.
21. Shafirovich, E., and Varma, A., "Metal- CO_2 Propulsion for Mars Missions: Current Status and Opportunities," *Journal of Propulsion and Power*, Vol. 24, No. 3, 2008, pp. 385-394.
22. Diwan, M., Diakov, V., Shafirovich, E., and Varma, A., "Noncatalytic Hydrothermolysis of Ammonia Borane," *International Journal of Hydrogen Energy*, Vol. 33, 2008, pp. 1135-1141.
23. Shafirovich, E., Teoh, S.K., and Varma, A., "Combustion of Levitated Titanium Particles in Air," *Combustion and Flame*, Vol. 152, 2008, pp. 262-271.
24. Diakov, V., Diwan, M., Shafirovich, E., and Varma, A., "Mechanistic Studies of Combustion Stimulated Hydrogen Generation from Sodium Borohydride," *Chemical Engineering Science*, Vol. 62, 2007, pp. 5586-5591.
25. Andrzejak, T.A., Shafirovich, E., Taylor, D.G., and Varma, A., "Apparatus for Studies of High-Temperature Chemical Reactions in Single Particle Systems," *Review of Scientific Instruments*, Vol. 78, No. 8, 2007, art. 085102 (7 pages).
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7. Shafirovich, E., and Camp, D.W., "A Summary of MAGE: A Method for Estimating the Maximum Possible Chemical Energy Content of UCG Product Gas per Unit Area for a Multistrata Coal Zone," Lawrence Livermore National Laboratory, February 28, 2012, LLNL-TR-551211.
8. Shafirovich, E., "Oxygen Candle Chemistry Evaluation," Final Task Report to Jacobs Technology, September 21, 2010.
9. Shafirovich, E., Varma, A., Mastalerz, M., Drobniak, A., and Rupp, J., "The Potential for Underground Coal Gasification in Indiana, Final Report to the Indiana Center for Coal Technology Research (CCTR), March 2, 2009, available at www.purdue.edu/discoverypark/energy/assets/pdfs/cctr/researchReports/UCG-FinalReport-03-02-09.pdf.

Patents

1. Varma, A., Diwan, M., Shafirovich, E., Hwang, H.-T., and Al-Kukhum, A., "Method for Releasing Hydrogen from Ammonia Borane," U.S. Patent US 8,377,416, Feb. 19, 2013.
2. Shafirovich, E., Diakov, V., and Varma, A., "Method for Generating Hydrogen," Patent Application WO2006/102332, US 2006/0210470, CA 2601448.

PRESENTATIONS

This section does not include presentations of papers listed in "Publications"

Invited Talks

1. "Combustion of Metals with H₂O and CO₂," Seyeon E&S, Jan. 11-13, 2016, Daejeon, South Korea.

2. "Chemical Gas Generators Based on Mechanically Alloyed Al-Mg Powder," Symposium VV: Recent Advances in Reactive Materials, 2014 Materials Research Society Fall Meeting, Dec. 2, 2014, Boston, MA.
3. "Novel Methods for Water Splitting by Aluminum," ETH Zurich, Aug. 2, 2012, Zurich, Switzerland.
4. "Electrodynamic Levitation, Laser Ignition and Microgravity in the Experiments on Combustion of Single Metal Particles," University of Houston, Mar. 26, 2010, Houston, TX.
5. "Heterogeneous Combustion and Thermochemical Conversion for Emerging Energy and Space Exploration Technologies," The University of Texas at El Paso, Mar. 12, 2010, El Paso, TX.
6. "Combustion of Metals for Mars Propulsion and Fuel Cell Applications," Indiana University – Purdue University Indianapolis, Sep. 18, 2008, Indianapolis, IN.
7. "Hydrogen Generation by Combustion for Portable Fuel Cell Applications," The 2006 Hydrogen Production & Storage Forum, Sep. 12, 2006, Vancouver, BC, Canada.
8. "Combustion of Magnesium and Aluminum Particles for Mars Propulsion and Hydrogen Generation," Pennsylvania State University, Mar. 13, 2006, University Park, PA.
9. "Combustion-Based Methods to Generate Hydrogen for Fuel Cells," NSF Workshop on Research Frontiers for Combustion in the Hydrogen Economy, Mar. 10, 2006, Arlington, VA.
10. "Combustion of Metals for Mars Propulsion and Fuel Cell Applications," 21st Annual Symposium of the Israeli Section of the Combustion Institute, Dec. 29, 2005, Haifa, Israel.
11. "Combustion of Magnesium and Aluminum in Carbon Oxides and Prospects for Using CO₂/Metal Propellants in Mars Missions," Northwestern Polytechnical University, Nov. 24, 2004, Xi'an, China.
12. "Magnesium Particle Burning in Microgravity," NEDO/CNES/CNRS Joint Research Program on Microgravity Combustion, Progress Meeting, Nov. 8, 2002, Orléans, France.
13. "Studies on Combustion of Metal Particles," University of Wales, Mar. 11, 1999, Aberystwyth, UK.
14. "Magnesium and Carbon Dioxide: A Rocket Propellant for Mars Missions," DLR-Institut für Raumsimulation, Jan. 6, 1999, Köln, Germany.
15. "Prospects for Using CO₂/Metal Propellants in Mars Missions," Moscow Aviation Institute, 1995, Moscow, Russia.
16. "Metal-CO₂ Propulsion for Mars Missions," Central Institute of Aviation Motors, 1993, Moscow, Russia.

Other Presentations

1. Cordova, S., and Shafirovich, E., "Magnesiothermic Combustion Synthesis of Zirconium and Hafnium Diborides," Materials Science and Technology 2017 (MS&T17), Pittsburgh, PA, Oct. 8-12, 2017.
2. Ferguson, R.E., Mantovani, J.G., and Shafirovich, E., "Combustion Joining of Regolith Tiles for *In-Situ* Fabrication of Launch and Landing Pads," 12th IAA Low-Cost Planetary Missions Conference (LCPM-12), Pasadena, California, Aug. 15-17, 2017.

3. Cordova, S., and Shafirovich, E., "Magnesiothermic Combustion Synthesis of Zirconium and Hafnium Diborides," 2017 National Space & Missile Materials Symposium (NSMMS), Indian Wells, CA, June 26-29, 2017.
4. Ferguson, R.E., Mantovani, J.G., and Shafirovich, E., "Combustion Joining of Regolith Tiles for *In-Situ* Fabrication of Launch and Landing Pads," 8th Joint Meeting of the Space Resources Utilization Roundtable and the Planetary and Terrestrial Mining Sciences Symposium, Montreal, Quebec, Canada, May 1-3, 2017.
5. Cordova, S., and Shafirovich, E., "Combustion Synthesis of Zirconium Diboride," Southwest Emerging Technology Symposium, El Paso, TX, Apr. 1, 2017.
6. Ferguson, R., and Shafirovich, E., "Combustion Joining of Regolith Tiles for *In-Situ* Fabrication of Launch/Landing Pads," Southwest Emerging Technology Symposium, El Paso, TX, Apr. 1, 2017.
7. Esparza, A.A., Ferguson, R.E., Love, N.D., and Shafirovich, E., "Thermal and catalytic decomposition of aqueous HAN solution," Southwest Emerging Technology Symposium, El Paso, TX, Apr. 1, 2017.
8. Cordova, S., and Shafirovich, E., "Combustion Synthesis of Boride-Based Electrode Materials for MHD Direct Power Extraction," 2017 Project Review Meeting for Crosscutting Research, Gasification Systems, and Rare Earth Elements Research Portfolios, Pittsburgh, PA, Mar. 20-23, 2017.
9. Cordova, S., Delgado, A., Esparza, A., and Shafirovich, E., "Mechanically Activated Combustion Synthesis of Silicides and Borides," Materials Science and Technology 2016 (MS&T16), Salt Lake City, UH, Oct. 23-27, 2016.
10. Delgado, A., Cordova, S., and Shafirovich, E., "Combustion of Regolith Simulants with Magnesium for the Production of Construction Materials on the Moon and Mars," 2016 Commercial and Government Responsive Access to Space Technology Exchange (CRASTE), Westminster, CO, June 20-23, 2016.
11. Delgado, A., Cordova, S., Lopez, I., and Shafirovich, E., "Combustion Synthesis and Shockwave Consolidation of Magnesium Silicide," 2016 National Space & Missile Materials Symposium (NSMMS), Westminster, CO, June 20-23, 2016.
12. Esparza, A., and Shafirovich, E., "Mechanically Activated Combustion Synthesis of Molybdenum Borosilicides for Ultrahigh-Temperature Structural Applications," 2016 National Space & Missile Materials Symposium (NSMMS), Westminster, CO, June 20-23, 2016.
13. Cordova, S., and Shafirovich, E., "Mechanically Activated Magnesiothermic Combustion Synthesis of Zirconium Diboride," 2016 National Space & Missile Materials Symposium (NSMMS), Westminster, CO, June 20-23, 2016.
14. Shafirovich, E., "Mechanically Activated Combustion Synthesis of Ultrahigh-Temperature Ceramics and Intermetallics," 2016 National Space & Missile Materials Symposium (NSMMS), Westminster, CO, June 20-23, 2016.
15. Delgado, A., and Shafirovich, E., "Reaction Mechanisms in Combustible Regolith/Magnesium Mixtures," 7th Joint Meeting of the Space Resources Utilization Roundtable and the Planetary and Terrestrial Mining Sciences Symposium, Golden, CO, June 7-9, 2016.

16. Cordova, S., and Shafirovich, E., "Combustion Synthesis of Boride-Based Electrode Materials for MHD Direct Power Extraction," 2016 Crosscutting Research & Rare Earth Elements Portfolios Review, Pittsburgh, PA, Apr. 18-22, 2016.
17. Cordova, S., and Shafirovich, E., "Combustion Synthesis of Zirconium Diboride and Hafnium Diboride: Thermodynamic Analysis," Southwest Emerging Technology Symposium, El Paso, TX, Apr. 9, 2016.
18. Ferguson, R., and Shafirovich, E., "Decomposition of HAN- and ADN-Based Monopropellants," Southwest Emerging Technology Symposium, El Paso, TX, Apr. 9, 2016.
19. Esparza, A.A., and Shafirovich, E., "Mechanically Activated Combustion Synthesis of Molybdenum Borosilicides for Ultrahigh-Temperature Structural Applications," Southwest Emerging Technology Symposium, El Paso, TX, Apr. 9, 2016.
20. Cordova, S., Delgado, A., and Shafirovich, E., "Fabrication of Construction Materials from Lunar and Martian Regolith Using Thermite Reactions with Magnesium," 2015 Annual Meeting of the Lunar Exploration Analysis Group, Columbia, MD, Oct. 20-22, 2015.
21. Shafirovich, E., "Combustion Synthesis of Boride-Based Electrode Materials for MHD Direct Power Extraction," 2015 NETL HBCU/UCR Joint Kickoff Meeting, Morgantown, WV, Oct. 27-28, 2015.
22. Shafirovich, E., "Mechanically Activated Combustion Synthesis of MoSi₂-Based Composites," 2015 NETL Crosscutting Research Review Meeting, Pittsburgh, PA, Apr. 27-30, 2015.
23. Cordova, S., Delgado, A., Nemir, D., and Shafirovich, E., "Fabrication of Magnesium Silicide via Mechanically Activated SHS Followed by Shockwave Consolidation," 5th Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 4, 2015.
24. Esparza, A.A., and Shafirovich, E., "Mechanically Activated SHS of Molybdenum Borosilicides for Ultrahigh-Temperature Structural Applications," 5th Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 4, 2015.
25. Guerrero, S., Dreizin, E.L., and Shafirovich, E., "Thermite Mixtures for Rapid Generation of Iodine," 5th Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 4, 2015.
26. Delgado, A., Cordova, S., and Shafirovich, E., "Reaction Mechanisms in Mixtures of Lunar and Martian Regolith Simulants with Magnesium," 5th Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 4, 2015.
27. Rodriguez, D.A., Dreizin, E.L., and Shafirovich, E., "Combustion of Mechanically Alloyed Al/Mg Powder with Water," 35th International Symposium on Combustion, San Francisco, CA, Aug. 3-8, 2014.
28. Delgado, A., Cordova, S., Lopez, I., and Shafirovich, E., "Mechanisms of Thermite Reactions in the Mixtures of Magnesium with Lunar and Martian Regolith Simulants," 35th International Symposium on Combustion, San Francisco, CA, Aug. 3-8, 2014.
29. Delgado, A., and Shafirovich, E., "Thermite Reactions in the Mixtures of Magnesium with Lunar and Martian Regolith Simulants," 5th Joint Meeting of the Space Resources Roundtable and the Planetary & Terrestrial Mining Sciences Symposium, Golden, CO, June 10, 2014.

30. Shafirovich, E., "Mechanically Activated Combustion Synthesis of MoSi₂-Based Composites," 2014 NETL Crosscutting Research Review Meeting, Pittsburgh, PA, May 19-23, 2014.
31. Alam, M.S., and Shafirovich, E., "Combustion Synthesis of Molybdenum Borosilicides for Ultrahigh-Temperature Structural Applications," 4th Southwest Energy Science and Engineering Symposium, El Paso, TX, Mar. 22, 2014.
32. Delgado, A., Lopez, I., and Shafirovich, E., "Combustion of Lunar and Martian Regolith with Magnesium," 4th Southwest Energy Science and Engineering Symposium, El Paso, TX, Mar. 22, 2014.
33. Delgado, A., Lopez, I., and Shafirovich, E., "Combustion Synthesis of Magnesium Silicide, A Promising Thermoelectric Material," 4th Southwest Energy Science and Engineering Symposium, El Paso, TX, Mar. 22, 2014.
34. Rodriguez, D.A., and Shafirovich, E., "Hydrogen Generation from Water through the Combustion Reactions with Mechanically Alloyed Al/Mg Powder," 4th Southwest Energy Science and Engineering Symposium, El Paso, TX, Mar. 22, 2014.
35. Alam, M.S., and Shafirovich, E., "Mechanically Activated SHS Compaction of Molybdenum Disilicide Based Composites," 12th International Symposium on Self-Propagating High Temperature Synthesis, South Padre Island, TX, 21 - 24 Oct. 2013.
36. Machado, M.A., Rodriguez, D.A., Dreizin, E.L., and Shafirovich, E., "Nanocomposite and Mechanically Alloyed Reactive Materials as Energetic Additives in Oxygen Generators," 12th International Symposium on Self-Propagating High Temperature Synthesis, South Padre Island, TX, 21 - 24 Oct. 2013.
37. Narayana Swamy, A.K., and Shafirovich, E., "Conversion of Aluminum Foil to Powders that React and Burn with Water," 12th International Symposium on Self-Propagating High Temperature Synthesis, South Padre Island, TX, 21 - 24 Oct. 2013.
38. Delgado, A., and Shafirovich, E., "Combustion and SHS Compaction of Lunar Regolith Mixed with Magnesium," 12th International Symposium on Self-Propagating High Temperature Synthesis, South Padre Island, TX, 21 - 24 Oct. 2013.
39. Shafirovich, E., "Mechanically Activated Combustion Synthesis of MoSi₂-Based Composites," Historically Black Colleges and Universities and Other Minority Institutions Contractors Review Meeting, Pittsburgh, PA, June 11-13, 2013.
40. Alam, M.S., and Shafirovich, E., "Combustion Synthesis and Densification of MoSi₂-Mo₅Si₃ Composites," 3rd Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 27, 2013.
41. Delgado, A., and Shafirovich, E., "Towards Better Combustion of Lunar Regolith with Magnesium," 3rd Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 27, 2013.
42. Narayana Swamy, A.K., and Shafirovich, E., "Combustion of Activated Aluminum with Water," 3rd Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 27, 2013.
43. Machado, M.A., Rodriguez, D.A., Dreizin, E.L., and Shafirovich, E., "Nanocomposite and Mechanically Alloyed Reactive Materials as Energetic Additives in Gas Generators," 3rd Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 27, 2013.

44. Rodriguez, D., Machado, M., Shafirovich, E., and Dreizin, E.L., "Gas Generating Compositions with Nanocomposite Reactive Materials," 2012 Materials Research Society Fall Meeting, Boston, MA, Nov. 25-30, 2012.
45. Delgado, A., and Shafirovich, E., "Lunar Regolith as a Reactive Material," 2012 Materials Research Society Fall Meeting, Boston, MA, Nov. 25-30, 2012.
46. Narayana Swamy, A.K., and Shafirovich, E., "Fabrication of Activated Aluminum Powder from Foil," 2012 Materials Research Society Fall Meeting, Boston, MA, Nov. 25-30, 2012.
47. Frias, J.A., VanWoerkom, M., and Shafirovich, E., "On the Extraction of Volatiles from Lunar Regolith Using Solar Power," 3rd Joint Meeting of the Space Resources Utilization Roundtable and the Planetary and Terrestrial Mining Sciences Symposium, Golden, CO, June 4-7, 2012.
48. Delgado, A., Álvarez, F., White, C., and Shafirovich, E., "Combustion of Lunar Regolith/Magnesium Mixtures," 3rd Joint Meeting of the Space Resources Utilization Roundtable and the Planetary and Terrestrial Mining Sciences Symposium, Golden, CO, June 4-7, 2012.
49. Delgado, A., and Shafirovich, E., "Combustion of Lunar Regolith/Magnesium Mixtures in Different Environments," 2nd Southwest Energy Science and Engineering Symposium, El Paso, TX, Mar. 24, 2012.
50. Narayana Swamy, A.K., and Shafirovich, E., "Hydrogen Generation from Water Using Activated Aluminum," 2nd Southwest Energy Science and Engineering Symposium, El Paso, TX, Mar. 24, 2012.
51. Frias, J., Delgado, A., and Shafirovich, E., "Microgravity Combustion of Thermite Mixtures for Welding in Space," 2nd Southwest Energy Science and Engineering Symposium, El Paso, TX, Mar. 24, 2012.
52. Alvarez, F., and Shafirovich, E., "Study of the Copper-Chlorine Thermochemical Cycle for Hydrogen Production from Water," 1st Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 16, 2011.
53. Garcia, A., Narayana Swamy, A.K., and Shafirovich, E., "Study of CO₂ Reduction in the SnO₂/SnO Thermochemical Cycle," 1st Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 16, 2011.
54. Garcia, A., Narayana Swamy, A.K., and Shafirovich, E., "Study on the Feasibilities of Reducing the Operating Temperatures in Chemical Oxygen Generators," 1st Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 16, 2011.
55. White, C., Alvarez, F., and Shafirovich, E., "Combustible Mixtures of Lunar Regolith with Metals," 1st Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 16, 2011.
56. Delgado, A., Frias, J., Rubio, M., and Shafirovich, E., "Exothermic Welding in Microgravity," 1st Southwest Energy Science and Engineering Symposium, El Paso, TX, Apr. 16, 2011.
57. White, C., Alvarez, F., and Shafirovich, E., "Production of Structural Materials by Combustion of Lunar Regolith with Metals," 1st Joint Meeting of the Space Resources Utilization Roundtable and the Planetary and Terrestrial Mining Sciences Symposium, Golden, CO, June 8-10, 2010.

58. Shafirovich, E., "Solar Thermochemical Splitting of Water and CO₂ for the Production of Synthetic Fuels," Energy Researcher's Workshop - Meeting Energy Demands of the Future, Dallas, TX, May 19-20, 2010.
59. Choudhuri, A., Borrok, D.M., Hurtado, J.M., and Shafirovich, E., "UTEP Center for Space Exploration Technology Research: Integrated Science and Engineering Approach to Propulsion, In-Situ Resource Utilization, and Planetary Science and Aerospace Education," 41st Lunar and Planetary Science Conference, The Woodlands, TX, Mar. 1-5, 2010.
60. Diwan, M., Hanna, D., Shafirovich, E., and Varma, A., "Combustion Wave Propagation in Magnesium/Water Mixtures: Experiments and Model," 20th International Symposium on Chemical Reaction Engineering, Kyoto, Japan, Sep. 7-10, 2008.
61. Shafirovich, E., Diwan, M., Diakov, V., and Varma, A., "New Methods for Hydrogen Generation from Boron Compounds and Water," 32nd International Symposium on Combustion, Montreal, Canada, Aug. 3-8, 2008.
62. Brockman, A., Basu, S., Gagare, P., Diwan, M., Shafirovich, E., Zheng, Y., Gore, J., Ramachandran, P., Varma, A., and Gore, J., "Purdue Hydrogen Systems Laboratory," Hydrogen Storage Technical Team Meeting, Detroit, MI, Nov. 19, 2007.
63. Diwan, M., Medde, M., Shafirovich, E., and Varma, A., "Modeling of Combustion Wave Propagation in Heterogeneous Mixtures for Hydrogen Generation," AIChE 2007 Annual Meeting, Salt Lake City, UT, Nov. 4-9, 2007.
64. Diwan, M., Diakov, V., Shafirovich, E., and Varma, A., "Heterogeneous Mixtures of Boron Compounds with Metals and Water for Hydrogen Generation," AIChE 2007 Annual Meeting, Salt Lake City, UT, Nov. 4-9, 2007.
65. Gore, J., Ramachandran, P., Varma, A., Zheng, Y., Kramer, R., Patterson, J., Maness, P., Shafirovich, E., Gagare, P., Diwan, M., Diakov, V., Basu, S., Brockman, A., Ting, B., and Pelter, L., "Purdue Hydrogen Systems Laboratory," 2007 Annual Merit Review & Peer Evaluation, Washington, DC, May 15-18, 2007.
66. Diakov, V., Diwan, M., Shafirovich, E., and Varma, A., "Novel Chemical Mixtures to Generate Hydrogen for Fuel Cells," NASCRE-2 - National Symposium on Chemical Reaction Engineering, Houston, TX, Feb. 2007.
67. Gore, J., Ramachandran, P., Gagare, P., Varma, A., Shafirovich, E., Diakov, V., Zheng, Y., Brockman, A., and Basu, S., "Purdue Hydrogen Technology Program," Hydrogen Storage Technical Team Meeting, Detroit, MI, Dec. 19, 2006.
68. Diakov, V., Diwan, M., Shafirovich, E., and Varma, A., "Combustion-Assisted Hydrolysis of Sodium Borohydride for Hydrogen Generation," 2006 MRS Fall Meeting, Boston, MA, Nov. 27 - Dec. 1, 2006.
69. Andrzejak, T.A., Shafirovich, E., and Varma, A., "Ignition Mechanisms of Metal-Coated Aluminum Particles," 2006 AIChE Annual Meeting, San Francisco, CA, Nov. 12-17, 2006.
70. Varma, A., Diakov, V., Diwan, M., and Shafirovich, E., "Novel Chemical Mixtures to Generate Hydrogen for Portable Fuel Cells," 2006 AIChE Annual Meeting, San Francisco, CA, Nov. 12-17, 2006.
71. Shafirovich, E., Diakov, V., and Varma, A., "Hydrogen Generation by Combustion," 19th International Symposium on Chemical Reaction Engineering, Potsdam/Berlin, Germany, Sep. 3-6, 2006.

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73. Gore, J., Ramachandran, P., Zheng, Y., Kramer, R., Varma, A., Fisher, T., Patterson, J., Maness, P., Ting, B., Pelter, L., Shafirovich, E., and Diakov, V., "Purdue Hydrogen Technology Program," 2006 Annual Merit Review & Peer Evaluation, Washington, DC, May 16-19, 2006.
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75. Shafirovich, E., Diakov, V., and Varma, A., "Novel Chemical Mixtures for Hydrogen Generation by Combustion," 2005 AIChE Annual Meeting, Cincinnati, OH, Oct. 30-Nov. 4, 2005.
76. Diakov, V., Shafirovich, E., and Varma, A., "Numerical Study of Combustion Stability in Chemical Oxygen Generators," 2005 AIChE Annual Meeting, Cincinnati, OH, Oct. 30-Nov. 4, 2005.
77. Shafirovich, E., Andrzejak, T., Taylor, D.G., and Varma, A., "Studies on Combustion of Single Ni-Coated Al Particles in Normal and Reduced Gravity," 2005 AIChE Annual Meeting, Cincinnati, OH, Oct. 30-Nov. 4, 2005.
78. Escot Bocanegra, P., Chauveau, C., Gökalp, I., and Shafirovich, E., "Studies on the Burning of Complex Aluminum Particles," European Conference for Aerospace Sciences (EUCASS), Moscow, Russia, July 4-7, 2005.
79. Shafirovich, E., and Varma, A., "Nickel-Coated Aluminum Particles: A Promising Fuel for Mars Missions," Strategic Research to Enable NASA's Exploration Missions Conference and Workshop, June 22-23, 2004, Cleveland, OH, NASA/TM-2004-213114, p. 151; NASA/CP-2004-213205/VOL2, p. 366-376.
80. Goldshleger, U.I., and Shafirovich, E.Ya., "Rocket Propellants CO₂/Me for Expeditions to Mars," Space Challenge in 21st Century: International Conference SPACE'2003, Moscow – Kaluga, Russia, Sep. 15-19, 2003.
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83. Aivazyan, R.G., Seplyarskii, B.S., and Shafirovich, E.Ya., "The Critical Conditions of Ignition of the Aluminum-Air Suspension," 3rd International School-Seminar "Modern Problems of Combustion and its Applications," Minsk, Belarus, 20-25 Aug. 1999.
84. Chauveau, C., Legrand, B., Shafirovich, E., Vieille, B., and Gökalp, I., "Single Droplet and Cloud Combustion Experiments Using Parabolic Flights," 4th International Symposium on Parabolic Flights, Paris – Le Bourget, France, June 14-15, 1999.

85. Legrand, B., Marion, M., Chauveau, C., Gökalp, I., and Shafirovich, E., "Ignition and Combustion of Levitated Magnesium and Aluminium Particles in Carbon Dioxide," Joint Meeting of the British, German and French Sections of the Combustion Institute, Nancy, France, 18-21 May 1999.
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89. Goldshleger, U.I., and Shafirovich, E.Ya., "On Reasons for Stability Loss of Magnesium Vapor-phase Combustion," 2nd International Seminar "Intra-Chamber Processes, Combustion and Gas Dynamics of Dispersed Systems," St. Petersburg, Russia, 30 June – 5 July 1997.
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95. Shafirovich, E.Ya., Afanasyeva, L.F., and Roslyakova, O.V., "Ignition and Explosion of Titanium Dust Preexposed to the Mechanical Activation," 4th International Colloquium on Dust Explosions, Porabka-Kozubnik, Poland, 4-9 Nov. 1990.