

*CURRICULUM VITAE***Dr. Mikhail (Misha) Zolotov**

School of Earth and Space Exploration, Arizona State University
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- Research:** Geochemistry of volatile elements (H, O, C, N, S, Cl, Na and K) and species (water, H₂, carbon oxides, organic compounds) on terrestrial planets, early asteroids, moons of giant planets and habitable zone exoplanets. Oxidation-reduction and acid-base reactions, mineral formation and rock alteration.
- Education:** Candidate of Sciences (Ph.D. analog) in geology/mineralogy, Vernadsky Institute of Geochemistry and Analytical Chemistry, USSR Academy of Sciences, Moscow, 1990
- Diploma in geology/geochemistry (with honor), Lomonosov Moscow State University, Moscow, USSR, 1982
- Employment:** 2006 – present: Research Professor, Associate Research Professor (2006-2011), School of Earth and Space Exploration, Arizona State University
- 2002 – 2006: Faculty Research Associate, Department of Geological Sciences, Arizona State University
- 1997 – 2002: Senior Research Scientist, Department of Earth and Planetary Sciences, Washington University in St. Louis, Missouri
- 1985 – 1998: Senior Research Scientist (1992 – 1998), Junior Research Scientist (1985 – 1992), Vernadsky Institute of Geochemistry and Analytical Chemistry, USSR/Russian Academy of Sciences, Moscow.
- Visiting Appointments:** January 2001 – March 2001: Visiting Investigator, Department of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, Massachusetts
- September 1996 – December 1996: Visiting Scientist, Department of Earth and Planetary Sciences, Washington University in St. Louis, Missouri
- February 1996 – May 1996: Visiting Scientist, Department of Earth and Planetary Physics, University of Tokyo, Japan
- November 1992 – March 1993: Visiting Scientist, Department of Geological Sciences, Arizona State University, Tempe, Arizona

Specific research interests:

- Gas-water-mineral type chemical interactions on Venus, Mars, Mercury, icy and rocky moons, and parent bodies of chondrites (asteroids)
- Formation and chemical evolution of oceans on icy moons
- Chemical weathering of rocks on Venus and Mars
- Oxidation states of planetary surfaces, asteroids and icy satellites
- Geochemistry of planetary volcanic gases and hydrothermal systems
- Inorganic-organic reactions in the solar system
- Habitability of solar system bodies
- Interior structure, composition and evolution of dwarf planet Ceres
- Gas-water-rock interactions on exoplanets

Grants and fellowships

Principal Investigator (PI), NASA Solar System Workings grant (Ceres), 2019-22
PI, NASA Solar System Workings grant (Venus), 2019-2022
PI, NASA Habitable Worlds grant (exoplanets), 2018-2021
PI, NASA Cosmochemistry grant, 2014-2019
PI, NASA Mars Fundamental Research grant, 2013-2016
PI, NASA Planetary Geology/Geophysics grant, 2011-2015
PI, NASA Outer Planets Research grant, 2010-2014
PI, NASA Cosmochemistry grant, 2010-2014
PI, NASA Planetary Geology/Geophysics grant, 2008-2012
PI, NASA Mars Fundamental Research grant, 2007-2012
PI, NASA Cosmochemistry grant, 2007-2010
PI, NSF Planetary Astronomy research grant, 2005-2009
PI, NASA Outer Planets Research grant, 2005-2008
PI, NASA Mars Fundamental Research grant, 2006
PI, NASA Origins of Solar System grant, 2004-2007
PI, Russian Foundation for Basic Research grant, 1994
Japan Society for the Promotion of Science (JSPS) research fellowship, 1996
NASA Space Grant at ASU (for mentoring undergraduate interns), 2005-2006
Co-PI, NATO Research Collaborative grant, 1996
Co-PI, Arizona State University – Vernadsky Institute sub-grant, 1992-1993
Co-Investigator, NASA DAVINCI Discovery call mission to Venus selected for phase A, 2015 and 2016.
Co-Investigator, NASA, MAss SPectrometer for Planetary EXploration/Europa (MASPEX), Europa Clipper mission grant, 2015-present
Co-Investigator, NASA, Radar for Europa Assessment and Sounding: Ocean to Near-surface (REASON) grant, Europa Clipper mission, 2015-present
Co-Investigator, NASA, SURface Dust Mass Analyzer (SUDA), Europa Clipper mission, 2016-present
Co-Investigator, NASA Exoplanet System Science (NexSS) grant, 2015-2019
Co-Investigator, NASA Outer Planets Research grant, 2010-2014
Co-Investigator, NASA Astrobiology Institute grant, 2009-2015
Co-Investigator, NASA Exobiology and Evolutionary Biology grant, 2005-2008
Co-Investigator, NASA Exobiology grant, 2002-2005
Co-Investigator, International Science Foundation grant, 1993-1994
Co-Investigator, Arizona State Univ. – Vernadsky Inst. Sci. Contract, 1992-1993

Professional activities and service:

- Co-Chair of the *Composition Working Group*, NASA Europa Clipper Mission (9/2020-present)
- Member, science proposal review panels for NASA *Discovery*, *Habitable Worlds*, *Solar System Workings*, *Emerging Worlds*, *Cosmochemistry*, *Astrobiology Institute*, *Mars Fundamental Research*, *Planetary Geology and Geophysics*, and *Outer Planets Research* programs.
- External reviewer of funding research proposals for the *National Science Foundation*, *NASA Cosmochemistry*, *Emerging Worlds*, *Origins of the Solar Systems*, *Habitable Worlds*, *Solar System Workings*, *Exobiology*, *Mars Fundamental Research*, *Mars Data Analysis*, *Cassini Data Analysis*, *Outer Planets Research*, *Planetary Geology and Geophysics*, *Exobiology and Evolutionary Biology* programs, *NASA Postdoctoral Program*, *NASA Earth and Space Science Fellowship*, *NASA Astrobiology Institute*, *NASA Astrobiology Institute Director's Discretionary Fund*, *The Petroleum Research Fund of the American Chemical Society*, *The French National Research Agency*, *Swiss National Science Foundation*, *The ETH Zurich Research Commission*, and *UKRI Future Leaders Fellowships*.
- Manuscript reviewer for *Science*, *Science Advances*, *Nature*, *Nature Geoscience*, *Nature Astronomy*, *Nature Communications*, *Nature Scientific Reports*, *Proc. Natl. Acad. Sci.*, *Geochimica et Cosmochimica Acta*, *Journal of Geophysical Research: Planets*, *Meteoritics and Planetary Science*, *Earth and Planetary Science Letters*, *Icarus*, *Geophysical Research Letters*, *American Mineralogist*, *Astrophysical Journal*, *Astrophysical Journal Letters*, *Acta Astronautica*, *Chemical Geology*, *Computers and Geosciences*, *Astrobiology*, *Space Science Reviews*, *Reviews in Mineralogy and Geochemistry*, *Advances in Space Science*, *Solar System Research*, *Origins of Life and Evolution of Biospheres*, and *Deep Sea Research*.
- Deputy director of the *Laboratory of Comparative Planetology and Meteoritics* at the Vernadsky Institute, Russian Academy of Sciences, Moscow (1991-1996)
- Organizer of the *Topics in Mineralogy of the Solar System* (with Steven Ruff) at ASU/SESE. 2006-2007, 2011)
- Organizer of the *Martian Mineralogy* (with Paul Niles) seminar series at the Department of Geology, ASU, 2004-2005
- Organizing committee member for the *Workshop on Modeling Martian Hydrous Environments*, 2009
- Member of an international group “*Active Enceladus*” sponsored by the International Space Science Institute (ISSI), Bern, Switzerland (2009-2012).
- Member of science/technology implementation teams for an instrument proposal for the European Space Agency JUICE mission (2012), for three instrument proposals for future NASA Europa mission (2014), and for NASA Discovery (2010, 2015, 2019) and New Frontiers mission (2009, 2017) proposals.
- Scientific secretary/organizer, 18-th Russian-American Working Meeting on Planetology (Vernadsky-Brown Microsymposium), Moscow, 1993
- Head, Counsel of Junior Scientists at the Vernadsky Institute, Moscow, 1988-1989
- Organizing committee member, *The First All-Soviet Union Symposium on Thermodynamics in Geology*, Suzdal', USSR, March 1985

Professional societies: Meteoritical Society
American Geophysical Union

Invited Presentations and Lectures

First Aqua-planetology symposium, ELSI, Tokyo, 2019
4th Tokyo Area Planetary Sciences meeting, National Observatory of Japan, Tokyo, 2019
Internal structure of carbonaceous chondrite parent bodies and their link with primitive asteroids. Villefranche Sur Mer, France, June 2-4, 2014
5th International Congress on the Science and Technology of Steelmaking, Dresden, Germany, 2012 (invited talk on Mercury's melts and a public lecture)
European Planetary Science Congress and the DPS meeting, 2011
American Geophysical Union Fall Meetings, 1996, 2005a, 2005b, 2010, 2011
Active Enceladus, International Space Science Institute workshop, Bern, 2010
Colloquium talk, School of Earth and Space Exploration, ASU, 2010
Colloquium talk, Washington University in St. Louis, 2009
The Enigma of Enceladus, International Workshop, Leicester, UK, 2009
Workshop on Modeling Martian Hydrous Environments, Houston, 2009
Evolution of Small Ice-Silicate Bodies in the Solar System, Winthrop, WA, 2009
Lunar and Planetary Institute, Houston, 2006
Planetary Science Institute, Tucson, 2006
AGU Chapman Conf. on Venus as a Terrestrial Planet, Key Largo, FL, 2006
Moscow State University, Russia, 2004
Marine Biological Laboratory at Woods Hole, Massachusetts, 2001
University of Washington, Seattle, 2000
St. Louis Astronomical Society, 2000
University of Tokyo, Department of Earth and Planetary Physics, 1996
Experimental Mineralogy, Petrology, and Geochemistry, Moscow, 1994
Institute of Raumsimulation (DLR), Cologne, Germany, 1992
USSR Mineralogical Society Annual Meeting, Leningrad, 1988

Other Oral Presentations

Lunar and Planetary Science Conferences, Houston, TX, 1999-2007, 2010, 2011, 2014, 2015, 2018, 2019

Annual Meetings of the Meteoritical Society, 2003, 2004, 2005, 2008, 2013, 2015, 2018

American Geophysical Union Fall meetings, 1996, 1998, 2002, 2004, 2005, 2009, 2010, 2011, 2019

Astrobiology Science Conferences, 2000, 2006, 2010

Joint European Planetary Science Congress and the DPS meeting, 2011

Goldschmidt Conference, Prague, 2011

The 4th Moscow Solar System Symposium, 2013

40th COSPAR Assembly, Moscow, 2014

Active Enceladus, International Space Science Institute, Bern, 2010

Workshop on Venus Geochemistry: Progress, Prospects, and New Missions, 2009

Workshop on Ices, Oceans, and Fire: Satellites of the Outer Solar System, 2007

Enceladus Focus Group Meeting II, 2007

Europa Focus Group Meeting V, 2006

Oxygen in Asteroids and Meteorites, 2005

Second Conference on Early Mars, 2004

Origin of Earth and Moon, 1998

Scientific Conference for Mars Exploration, Bad Honnef, Germany, 1992

Intl. Workshop: Engineering Model of Mars Environment, Hungary, 1990

Fourth International Conference on Mars, 1989

Vernadsky-Brown Microsymposia, 1986-1989, 1991, 1995, 2002

Department of Geological Sciences/SESE, Arizona State Univ., 1990, 2004-2006, 2010

Department Earth and Planetary Sci., Washington University in St. Louis., 1997, 1999, 2000, 2002, 2009

Vernadsky Institute, Moscow, 1984, 1987, 1988, 1989, 1990, 1994, 1998

Woods Hole Oceanographic Institution, Marine Chemistry & Geochemistry, 2000

Brown University, Planetary Geology Group, 2000

Teaching

- *Planetary Geochemistry*, Arizona State University, 2015, 2019
- *Oceans and the Atmosphere*, Washington University in St. Louis, 2001, 2002
- *Planetary Materials*, Shandong University, Weihai campus, China, 2016 (an invited one week teaching as a part of a three-weeks summer course)

**Advising,
supervision,
advisory
committees**

Advising graduate students:

Lev Spivak-Birndorf at ASU, 2008-2010 (supervise research)

Christopher Glein at ASU, 2006-2010 (co-adviser)

Amy McAdam at ASU, 2005-2008 (co-adviser)

Co-chair of the Ph.D. examination committee at ASU (Amy McAdam, 2008).

Thesis is titled: “*Martian weathering processes: Terrestrial analogs and theoretical modeling studies*”

Member of the Ph.D. examination committees at ASU: James Ashley (2010), Christopher Glein (2012), Simon Porter (2013), Jinping Hu (2016), Divya Peddinti (2017), Travis Gabriel (2019)

Member of Ph.D. technical review committees at ASU: Amy McAdam (2007, co-chair), James Ashley (2009), Christopher Glein (2011), Simon Porter (2013), Divya Peddinti (2016), Travis Gabriel (2019)

Member of the Comprehensive Examination committees at SESE/ASU: Christopher Glein (2007), Lev Spivak-Birndorf (2009), Simon Porter (2009), Divya Peddinti (2012), Nikhil Monga (2012), Travis Gabriel (2017, committee chair), Sierra Ferguson (2018, committee chair), John Christoph (2018, committee chair).

Graduate student advisory committee member (Melissa Bunte, 2010; Divya Peddinti, 2011-2017; Travis Gabriel, 2014-2019; Sierra Ferguson, 2018; John Christoph, 2018; Kevin Hubbard, 2019 – present)

Senior thesis reader/co-advisor (Alex Mastrean, ASU SESE/Barrett Honors College, 2015)

Member of the Graduate Committee (SESE/ASU) 2017- present

Undergraduate student adviser, ASU/SESE, 2008

Advising undergraduate researchers/workers

Michelle Krieg, ASU, 2005-2006

Oleg Suleimenov, Lomonosov Moscow State University, 1984-1985

Publications

Peer reviewed publications: 66

Non-refereed publications: >171

Citation indices

h index: 31 (Google Scholar), 27 (Scopus)

h10 index: 59 (Google Scholar)

Journal publications and book chapters:

66. Donald M Glaser, Hilairy Ellen Hartnett, Steven J Desch, Cayman T Unterborn, Ariel Anbar, Steffen Buessecker, Theresa Fisher, Steven Glaser, Stephen R Kane, Carey M Lisse, Camerian Millsaps, Susanne Neuer, Joseph G O'Rourke, Nuno Santos, Sara Imari Walker, **Mikhail Zolotov** (2020) *The Astrophysical Journal* **893**, 163. <https://iopscience.iop.org/article/10.3847/1538-4357/ab822d/pdf>
65. Glein C. R., **Zolotov M. Y.** (2020) Hydrogen, hydrocarbons, and habitability across the solar system. *Elements* **16**, 47–52.
64. **Zolotov M. Yu.** (2020) The composition and structure of Ceres' interior. *Icarus* **335**, 113404. <https://doi.org/10.1016/j.icarus.2019.113404>
63. **Zolotov M.** (2019) Chemical weathering on Venus. In *Oxford Research Encyclopedia of Planetary Science*. Oxford University Press. <http://dx.doi.org/10.1093/acrefore/9780190647926.013.146>.
62. **Zolotov M. Yu.** (2018) Gas-solid interactions on Venus and other solar system bodies. *Reviews in Mineralogy and Geochemistry* **84**, 351–392.
61. McKinnon W.B., Waite, J.H., Mousis, O., Lunine, J.I, **Zolotov, M.** (2018) The mysterious origin of Enceladus: A compositional perspective. In: Enceladus and the Icy Moons of Saturn, ed. by P. M. Schenk et al., University of Arizona Press, Tucson, pp. 17–38.
60. **Zolotov, M. Yu.** (2017) Aqueous origins of bright salt deposits on Ceres. *Icarus* **296**, 289–304.
59. Jogo, K., Nakamura, T., Ito, M., Wakita, S., **Zolotov, M. Yu.**, and Messenger, S. R. (2017) Mn-Cr ages and formation conditions of fayalite in CV3 carbonaceous chondrites: Constraints on the accretion ages of chondritic asteroids. *Geochim. Cosmochim. Acta* **199**, 58–74.
58. **Zolotov, M.** (2016) Planetary Science: Salty Ceres. *Nature Geoscience* **9**, 476–477.
57. **Zolotov, M. Yu.**, and Mironenko, M. V. (2016) Chemical models for martian weathering profiles: Insights into formation of layered phyllosilicate and sulfate deposits. *Icarus* **275**, 203–220.
56. Evans, L. G., Peplowski, P. N., McCubbin, F. M., McCoy, T. J., Nittler, L. R., **Zolotov, M. Yu.**, Ebel, D. S., Lawrence, D. J., Starr, R. D., Weider, S. Z., and Solomon, S. C. (2015) Chlorine on the surface of Mercury: MESSENGER gamma-ray measurements and implications for the planet's formation and evolution. *Icarus* **257**, 417–427.
55. **Zolotov, M. Yu.** (2015) Solid Surface - Atmosphere Interactions. *Treatise on Geophysics, Second edition*, Schubert G. (ed.), vol. 10, *Physics of Terrestrial Planets and Moons*, pp. 411–427.
54. **Zolotov, M. Yu.** (2014) Formation of brucite and cronstedtite-bearing mineral assemblages on Ceres. *Icarus* **228**, 13–26.
53. **Zolotov, M. Yu.**, Sprague, A., Hauck, S, II, Nittler, L., Solomon, S., and Weider, S. (2013) The redox state, FeO content, and origin of sulfur-rich magmas on Mercury. *J. Geophysical Research: Planets* **118**, 138–146.
52. Lehner, S. W., Petaev, M. I., **Zolotov, M. Yu.**, and Buseck, P.R. (2013) Formation of niningerite by silicate sulfidation in EH3 enstatite chondrites *Geochim. Cosmochim. Acta* **101**, 34–56.

51. **Zolotov, M. Yu.** (2012) Aqueous fluid composition in CI chondritic materials: Chemical equilibrium assessments in closed systems. *Icarus* **220**, 713–729.
50. Mironenko, M. V., and **Zolotov, M. Yu.** (2012) Equilibrium-kinetic model for water-rock interactions in closed systems. *Geochemistry International* **50**, 1-7.
49. **Zolotov, M. Yu.** (2011) On the chemistry of mantle and magmatic volatiles on Mercury. *Icarus* **212**, 24–41.
48. Sohl, F., Choukroun, M., Kargel, J., Kimura, J., Pappalardo R., Vance, S., and **Zolotov, M.** (2010) Subsurface Water Oceans on Icy Satellites: Composition and Exchange Processes. *Space Science Reviews* **153**, 285–510.
47. **Zolotov, M. Yu.**, and Kargel, J. S. (2009) On the Composition of Europa’s Icy Shell, Ocean and Underlying Rocks. In *Europa* (R. Pappalardo, W. B. McKinnon, and K. Khurana, Eds.). University of Arizona Press, Tucson, 431–457.
46. **Zolotov, M. Yu.**, (2009) On the Composition and Differentiation of Ceres. *Icarus* **204**, 183–193.
45. Jogo, K., Nakamura, T., Noguchi, T., and **Zolotov, M. Yu.** (2009) Fayalite in the Vigarano CV3 Carbonaceous Chondrite: Occurrences, Formation Age and Conditions. *Earth and Planetary Science Letters* **227**, 320–328.
44. Niles*, P. B., **Zolotov, M. Yu.**, and Leshin, L. (2009) Insights into the Formation of Fe- and Mg-rich Aqueous Solutions on Early Mars Provided by the ALH 84001 Carbonates. *Earth and Planetary Science Letters* **226**, 122–130.
43. Glein*, C. R., **Zolotov, M. Yu.**, and Shock, E. L. (2008) Oxidation state of hydrothermal fluids on early Enceladus. *Icarus* **197**, 157–163.
42. McAdam*, A. C., **Zolotov, M. Yu.**, Mironenko, M. V., and Sharp, T. G. (2008) Formation of Silica by Low-Temperature Acid Alteration of Martian Rocks. *Journal of Geophysical Research [Planets]* **113**, E08003, doi:10.1029/2007JE003056.
41. McAdam*, A. C., **Zolotov, M. Yu.**, Leshin, L. A., and Sharp, T. G. (2008) Preferential Low-pH Dissolution of Pyroxene in Plagioclase-Pyroxene Mixtures: Implications for Martian Surface Materials. *Icarus* **196**, 90–96.
40. **Zolotov, M. Yu.** (2007) An oceanic composition on early and today’s Enceladus. *Geophysical Research Letters* **34**, L23203, doi: 1029/2007GLG031234.
39. **Zolotov, M. Yu.**, and Mironenko, M. V. (2007) Timing of acid weathering on Mars: A Kinetic-Thermodynamic Assessment. *Journal of Geophysical Research [Planets]* **112**, E07006, doi:10.1029/2006JE002882.
38. **Zolotov, M. Yu.** (2007) Solid Planet - Atmosphere Interactions. *Treatise on Geophysics*. Schubert G. (ed.), Volume 10, pp. 349–370, Oxford: Elsevier Ltd. doi:10.1016/B978-044452748-6/00181-4.
37. **Zolotov, M. Yu.**, Mironenko, M. V., and Shock, E. L. (2006) Thermodynamic Constraints on Fayalite Formation on Parent Bodies of Chondrites. *Meteoritics and Planetary Science* **41**(11), 1775–1796.

*ASU student

36. Owen, T. C., Niemann, H., Atreya, S., and **Zolotov, M. Y.** (2006) Between Heaven and Earth: The Exploration of Titan. *Faraday Discussions* **133**, 387–391.
35. Seewald, J., **Zolotov, M. Yu.**, and McCollom, T. (2006) Experimental Investigation of Carbon Speciation under Hydrothermal Conditions. *Geochimica et Cosmochimica Acta* **70**, 446–460.
34. **Zolotov, M. Yu.**, and Shock, E. L. (2005) Formation of Jarosite-bearing Deposits through Aqueous Oxidation of Pyrite at Meridiani Planum, Mars. *Geophysical Research Letters* **32**, No. 21, L21203, doi: 10.1029/2005 GL024253.
33. **Zolotov, M. Y.**, and Shock, E. L. (2004) A Model for Low-Temperature Biogeochemistry of Sulfur, Carbon, and Iron on Europa. *J. Geophysical Research [Planets]* **109**, E06003, doi: 10.1029/2003JE002194.
32. Kargel, J. S., Carlson, R. W., Davies, A. G., Fegley, B., Gillespie, A., Greeley, R., Howell, R. R., Jessup, K. L., Kamp, L., Keszthelyi, L. P., Lopes, R. M., MacIntyre, T.J., Marchis, F., McEwen, A. S., Milazzo, M., Perry, J., Radebaugh, J., Schaefer, L., Schmerr, N., Smythe, D. W., Spencer, J. R., Williams, D. A., Zhang, J., and **Zolotov, M. Yu.** (2003) Extreme Volcanism on Io: Latest Insights at the End of Galileo Era. *Eos, Transactions, Amer. Geophysical Union*, **84**, No. 33, 113, 318.
31. **Zolotov, M. Y.**, and Shock, E. L. (2003) Energy for Biologic Sulfate Reduction in a Hydrothermally Formed Ocean on Europa. *Journal of Geophysical Research, [Planets]* **108**, E4, 5022, doi: 10.1029/2002JE001966.
30. Moses, J. I., **Zolotov, M. Yu.**, and Fegley, B., Jr. (2002) Alkali and Chlorine Photochemistry in a Volcanically Driven Atmosphere on Io. *Icarus* **156**, 107–135.
29. Moses, J. I., **Zolotov, M. Yu.**, and Fegley, B., Jr. (2002) Photochemistry of a Volcanically Driven Atmosphere on Io: Sulfur and Oxygen Species from a Pele-type Eruption. *Icarus* **156**, 76–106.
28. **Zolotov, M. Yu.**, and Shock, E. L. (2001) Composition and Stability of Salts on the Surface of Europa and their Oceanic Origin. *Journal of Geophysical Research, [Planets]* **106**, 32815–32828.
27. **Zolotov, M. Yu.**, and Shock, E. L. (2001) Stability of Condensed Hydrocarbons in the Solar Nebula. *Icarus* **150**, 323–337.
26. Fegley, B., Jr., and **Zolotov, M. Yu.** (2000) Chemistry of Sodium, Potassium and Chlorine in Volcanic Gases on Io. *Icarus* **148**, 193–210.
25. Shock, E. L., Amend J. P., and **Zolotov, M. Y.** (2000) The Early Earth vs. the Origin of Life. In *Origin of the Earth and Moon* (R. Canup and K. Righter, Eds.), pp. 527-543, Univ. of Arizona Press, Tucson.
24. **Zolotov, M. Yu.**, and Fegley, B., Jr. (2000) Eruption Conditions of Pele Volcano on Io Inferred from Chemistry of its Volcanic Plume. *Geophysical Research Letters* **27**, 2789–2792.
23. **Zolotov, M. Yu.**, and Shock, E. L. (2000) An Abiotic Origin for Hydrocarbons in the Allan Hills 84001 Martian Meteorite Through Cooling of Magmatic and Impact-Generated Gases. *Meteoritics and Planetary Science* **35**, 629–638.

22. **Zolotov, M. Yu.**, and Shock, E. L. (2000) A Thermodynamic Assessment of the Potential Synthesis of Condensed Hydrocarbons during Cooling and Dilution of Volcanic Gases. *Journal of Geophysical Research, [Solid Earth]* **105**, 539–559.
21. **Zolotov, M. Yu.**, and Fegley, B., Jr. (1999) The Oxidation State of Volcanic Gases and Interior of Io. *Icarus* **141**, 40–52.
20. **Zolotov, M.**, and Shock, E. (1999) Abiotic Synthesis of Polycyclic Aromatic Hydrocarbons on Mars. *Journal of Geophysical Research, [Planets]* **104**, 14033–14049.
19. **Zolotov, M. Yu.**, Fegley, B., Jr., and Lodders, K. (1999) Stability of Micas on the Surface of Venus. *Planetary and Space Science* **47**, 245–260.
18. **Zolotov, M. Yu.**, and Fegley, B., Jr. (1998) Volcanic Origin of Disulfur Monoxide (S₂O) on Io. *Icarus* **133**, 293–297.
17. **Zolotov, M. Yu.**, and Fegley, B., Jr. (1998) Volcanic Production of Sulfur Monoxide (SO) on Io. *Icarus* **132**, 431–434.
16. **Zolotov, M. Yu.**, Fegley, B., Jr., and Lodders, K. (1997) Hydrous Silicates and Water on Venus. *Icarus* **130**, 475–494.
15. Fegley, B., Jr., **Zolotov, M. Yu.**, and Lodders, K. (1997) The Oxidation State of the Lower Atmosphere and Surface of Venus. *Icarus* **125**, 416–439.
14. **Zolotov, M. Yu.** (1996) A Model for the Thermal Equilibrium of the Surface Venusian Atmosphere. *Geochemistry International* **33**, No. 10, 80–100.
13. Komada, N., Moecher, D. P., Westrum, E., Jr., Hemingway, B. S., **Zolotov, M. Yu.**, Semenov, Yu. V., and Khodakovskiy I. L. (1996) Thermodynamic Properties of Scapolites ranging from 10 K to 1000 K. *J. Chemical Thermodynamics* **28**, 941–973.
12. Komada, N., Westrum, E., Jr., Hemingway, B. S., **Zolotov, M. Yu.**, Semenov, Yu. V., Khodakovskiy, I. L., and Anovitz, L. M. (1995) Thermodynamic Properties of Sodalite at Temperatures from 15 K to 1000 K. *J. Chemical Thermodynamics* **27**, 1119–1132.
11. Surkov, Yu. A., Moskaleva, L. P., **Zolotov, M. Yu.**, Kharykova, V. P., Manvelyan, O. S., Smirnov, G. G., and Golovin, A. V. (1994) Phobos-2 Data on Martian Surface Geochemistry. *Geochemistry International* **31**, No. 10, 50–58.
10. **Zolotov, M. Yu.**, and Volkov, V. P. (1992) Chemical Processes on the Planetary Surface. In *Venus Geology, Geochemistry and Geophysics*. (V. L. Barsukov *et al.*, Eds.), Univ. of Arizona Press, Tucson, 177–199.
9. Gooding, J. L., Arvidson, R. E., and **Zolotov, M. Yu.** (1992) Physical and Chemical Weathering. In *Mars*, (H. Kieffer, B. Jakosky, C. Snyder, and M. Matthews, Eds.), Univ. of Arizona Press, Tucson, 626–651.
8. **Zolotov, M. Yu.**, and Khodakovskiy, I. L. (1989) Chemical Weathering. In *Planet Venus: Atmosphere, Surface, Interior Structure*, (V. L. Barsukov, and V. P. Volkov, Eds.), Nauka, Moscow, 262–278, (in Russian).

7. Sidorov, Yu. I., and **M. Yu. Zolotov** (1989) *Rocks and Soil of the Martian Surface*. Nauka: Russian Academy of Sciences, Moscow, 224 pp. (book in Russian with English summary and table of contents).
6. **Zolotov, M. Yu.** (1989) Chemical Weathering on Venus and Mars: Similarities and Differences. In *Cosmochemistry and Comparative Planetology*, (V. L. Barsukov, Ed.), 71-80, Nauka, Russian Academy of Sciences, Moscow, (in Russian).
5. Volkov, V. P., **Zolotov, M. Yu.**, and Khodakovsky, I. L. (1986) Lithospheric-Atmospheric Interaction on Venus. In *Chemistry and Physics of Terrestrial Planets*, (S. Saxena, Ed.), Springer-Verlag, New York, e.a., 136–190.
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