

*CURRICULUM VITAE***Dr. Mikhail Zolotov**

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- Research Interests:** Geochemistry of volatile elements (H, O, C, N, S, Cl, Na, K) and species (water, carbon oxides, organic compounds, etc.) on diverse solar system bodies: terrestrial and dwarf planets, asteroids, moons of giant planets, and comets.
- Education:** Vernadsky Institute of Geochemistry and Analytical Chemistry, USSR Academy of Sciences, Moscow, USSR. Candidate of Science (Ph. D.) in geochemistry, 1990
Moscow State University, Geological department, Moscow, USSR. Diploma in geochemistry (with honor), 1982
- Employment:** August 2011 – present:
Research Professor, School of Earth and Space Exploration, Arizona State University
- July 2006 – August 2011:
Associate Research Professor, School of Earth and Space Exploration, Arizona State University
- June 2002 – July 2006:
Faculty Research Associate, Department of Geological Sciences, Arizona State University
- 1997 – June 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, 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 Geology, Arizona State University, Tempe,
Arizona

**Specific research
interests:**

- gas-water-mineral type chemical interactions on Venus, Mars, Mercury, icy and rocky satellites, and parent bodies of chondrites (asteroids)
- formation and chemical evolution of oceans on icy satellites
- 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 (Mars, icy moons, large asteroids)
- physical-chemical structure and evolution of dwarf planets (Ceres)

**Grants and
fellowships**

Principal Investigator, NASA Planetary Geology/Geophysics grant, 2011-2014

Principal Investigator, NASA Outer Planets Research grant, 2010-2014

Principal Investigator, NASA Cosmochemistry grant, 2010-2013

Principal Investigator, NASA Planetary Geology/Geophysics grant, 2008-2012

Principal Investigator, NASA Mars Fundamental Research grant, 2007-2012

Principal Investigator, NASA Cosmochemistry grant, 2007-2010

Principal Investigator, NSF Planetary Astronomy research grant, 2005-2009

Principal Investigator, NASA Outer Planets Research grant, 2005-2008

Principal Investigator, NASA Mars Fundamental Research grant, 2006

Principal Investigator, NASA Origins of Solar System grant, 2004-2007

Principal Investigator, Russian Foundation for Basic Research grant, 1994

NASA Space Grant at ASU (for mentoring undergraduate interns), 2005-2006

Japan Society for the Promotion of Science (JSPS) research fellowship, 1996

Co-PI, NATO Research Collaborative grant, 1996

Co-PI, Arizona State University – Vernadsky Institute subgrant, 1992-1993

Co-Investigator, NASA Outer Planets Research grant, 2010-2014

Co-Investigator, NASA Astrobiology Institute grant, 2009-2013

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:

- Member, science review panels for NASA *Discovery*, *Mars Fundamental Research*, *Cosmochemistry*, and *Outer Planets Research* programs
- External reviewer of funding research proposals for the *National Science Foundation*, *NASA Cosmochemistry*, *Origins of the Solar Systems*, *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 Astrobiology Institute Director's Discretionary Fund*, and *The Petroleum Research Fund of the American Chemical Society*
- Manuscript reviewer for *Science*, *Nature*, *Geochimica et Cosmochimica Acta*, *Journal of Geophysical Research (Planets)*, *Icarus*, *Meteoritics and Planetary Science*, *Earth and Planetary Science Letters*, *American Mineralogist*, *Chemical Geology*, *Computers and Geosciences*, *Astrobiology*, *Advances in Space Science*, and *Deep Sea Research*.
- Organizer of the *Topics in Mineralogy of the Solar System* (together with Steve Ruff) at ASU/SESE. 2006-2007, 2011- present)
- 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
- Deputy Director of the Laboratory of Comparative Planetology and Meteoritics at the Vernadsky Institute, Russian Academy of Sciences, Moscow (1991-1996)
- Member of science/technology implementation team for an instrument proposal for the Europa-Jupiter NASA and ESA missions (2009-present)
- Member of an international group "Active Enceladus" sponsored by the International Space Science Institute (ISSI), Bern, Switzerland (2009-2011).
- Member of a science/technology implementation team (2007-2009) for NASA New Frontiers mission proposal (the proposal has not been supported)
- Member of science/technology implementation team for NASA Discovery mission proposal (2010), (the proposal has not been supported)
- Conference session convener: Astrobiology Science Conference (2010), AGU Fall Meeting (1996)
- Scientific secretary, 18-th Russian-American Working Meeting on Planetology, (Vernadsky-Brown Microsymposium), Moscow, 1993
- Head, Counsel of Junior Scientists, Vernadsky Institute, Moscow, 1988-1989
- Scientific secretary, *First All-Soviet Union Symposium on Thermodynamics in Geology*, Suzdal', USSR, March 1985

Professional societies:

Meteoritical Society
American Geophysical Union

Invited Presentations and Lectures

European Planetary Science Congress and the DPS meeting, 2011 (upcoming)
American Geophysical Union Fall Meetings, 1996, 2005a, 2005b, 2010, 2011(upcoming)
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

Major Oral Presentations

Joint European Planetary Science Congress and the DPS meeting, 2011 (upcoming)

Goldschmidt Conference, 2011

Lunar and Planetary Science Conferences, Houston, TX, 1999-2007, 2010, 2011

American Geophysical Union Fall meetings, 1996, 1998, 2002, 2004, 2005, 2009, 2010, 2011(upcoming)

Annual Meetings of the Meteoritical Society, 2003, 2004, 2005, 2008

Astrobiology Science Conferences, 2000, 2006, 2010

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

Internatl. 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 Univ., 1997, 1999, 2000, 2002, 2009

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

Woods Hole Oceanographic Institution, Marine Chemistry & Geochemistry, 2000

Brown University, Planetary Geology Group, 2000

Teaching

Oceans and the Atmosphere, Washington University in St. Louis, 2001 and 2002

Occasional lectures at ASU on geochemistry of solar system bodies

Publications

Peer reviewed publications: 50 (including a scientific book on Mars)

Non-refereed publications: 137

Citations

h-index: 15 (*h* works are cited at least *h* times; ISI Web of Knowledge database)

Publications of Mikhail Zolotov

Peer reviewed publications:

50. Mironenko, M. V., and **Zolotov, M. Yu.** (2011) Equilibrium-Kinetic Model for Water-Rock Interactions in Closed Systems. *Geochemistry International*, in press.
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. *Gleim, 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) Atmosphere-Surface 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.
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.

* Student work

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 Khodakovsky 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., Khodakovsky, 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 Khodakovsky, 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.

4. Sidorov, Yu. I., and **Zolotov, M. Yu.** (1986) Weathering of Martian Surface Rocks. In *Chemistry and Physics of Terrestrial Planets*, (S. Saxena, Ed.), Springer-Verlag, New York, e.a., 191-223.
3. Barsukov, V. L., Borunov, S. P., Volkov, V. P., Dorofeeva V. A., **Zolotov, M. Yu.**, Parot'kin, C. V., Semenov, Yu. V., Shapkin, A. I., Sidorov, Yu. I. and Khodakovsky, I. L. (1986) Mineral Composition of Venus soil at Venera 13, Venera 14 and Vega 2 Landing Sites According to Thermodynamic Calculations. *Doklady Akademii Nauk USSR* **287**, (2), 415-417, (in Russian, English translation: *Doklady, Earth Sciences Section*).
2. **Zolotov, M. Yu.** (1986) Geochemical Structure of Major Layering of the Ioko-Dovyren Dunite-Troctholite-Gabbro-Norite Intrusion (Northern Baikal Region). *Reg. Geol. Nek. Raionov SSSR* **7**, Moscow University, 18-23, (in Russian).
1. **Zolotov, M. Yu.** (1983) Distribution of Copper, Zinc, Nickel, Chromium, Titanium, and Silver in Rocks of the Large Tolbachik Fracture Eruption 1975-76 (Kamchatka [USSR]). *Reg. Geol. Nek. Raionov SSSR* **6**, Moscow University, 63-67, (in Russian).

Non-referred publications:

139. **Zolotov, M. Yu.**, and Mironenko, M. V. (2011). Evaluating Origins and Fate of Martian Phyllosilicates with Water-Rock Interaction Models. Abstract presented at 2011 Fall Meeting, AGU, San Francisco, Calif.
138. **Zolotov, M. Yu.**, Sprague, A. L., Nittler, L. R., Weider, S. Z., Starr, R. D., Evans, L. G., Boynton, W. V., Goldsten, J. O., Hauck, S.A., II, and Solomon, S. C. (2011). Implications of the MESSENGER discovery of high sulfur abundance on the surface of Mercury. Abstract presented at 2011 Fall Meeting, AGU, San Francisco, Calif.
137. **Zolotov, M. Yu.**, Tobie, G., Postberg, F., Magee, B., Waite, J. H., and Esposito, L. (2011). Chemical and Phase Composition of Enceladus: Insights from Cassini Observations. European Planetary Science Congress and DPS(AAS) meeting. October 2-7, 2011, Nantes, France, abstract EPSC-DPS-1330.
136. Waite, J. H., Magee, B., Brockwell, T., **Zolotov, M. Yu.**, Teolis, B., Lewis, W. S., and the INMS Team (2011). Enceladus' Plume Composition. *European Planetary Science Congress and DPS(AAS) meeting*. October 2-7, 2011, Nantes, France, abstract EPSC-DPS-61.
135. Mironenko, M.V., **Zolotov, M. Yu.** (2011). A Kinetic-Thermodynamic Model for Irreversible Water-Rock Interactions: Approaches and a Program Implementation. *Ist Russian-Swiss Seminar «Methods for modeling of geochemical processes: algorithms, data prediction, experimental validation, and relevant applications»*, IGEM RAS, Moscow, May 17–20, 2011, abstract.
134. **Zolotov, M. Yu.**, and Mironenko M. V. (2011). Chemical Models for Formation of Clay-Rich Layered Rocks in the Mawrth Vallis Region, Mars. *Goldschmidt conference*, abstract.
133. **Zolotov, M. Yu.** (2011) Fluid Chemistry of Aqueous Alteration of CI-type Chondritic Materials: Thermodynamic Assessment. *42nd Lunar and Planet. Sci.* [CD-ROM], abstract 1988.
132. Petaev, M. I., Lehner, S. W. **Zolotov, M. Yu.**, and Buseck, P.R. (2011) The Origin of Niningerite in EH3 Silica-bearing Chondrules: Insights from mineral equilibria. *42nd Lunar and Planet. Sci.* [CD-ROM], abstract 2323.
132. Lehner, S.W., Petaev, M. I., **Zolotov, M. Yu.**, and Buseck, P.R. (2011) The Origin of Niningerite in EH3 Silica-bearing Chondrules. *42nd Lunar and Planet. Sci.* [CD-ROM], abstract 1863.
131. **Zolotov, M. Yu.** (2010) Chemistry of Magmatic Volatiles and Explosive Volcanism on Mercury. *41st Lunar and Planet. Sci.* [CD-ROM], abstract 1246.
130. **Zolotov, M. Yu.** (2010) Compositions of Oceans on Icy Solar System Bodies. Abstract P24A-02 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
129. **Zolotov, M. Yu.** (2010) Chemical Disequilibria and Sources of Gibbs Free Energy inside Enceladus. Abstract P33A-1563 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

128. Spivak-Birndorf, L. J. and **Zolotov, M. Yu.** (2010) Elemental Composition of Comets: A Mass Balance model. *Meteorit. Planet. Sci.*, 45, Suppl. A194.
127. **Zolotov, M. Yu.** (2010) Oceanic Chemistry Evolution on Icy Moons. *Astrobiology Science Conference 2010*, [CD-ROM], abstract 5304.
126. Mironenko M. V., **Zolotov M. Yu.**, Marshakov A. I., Yurasova, T. A., and Rybkina, A. A. (2010). Dissolution Kinetics of Kamacite: Electrochemical Study under Anoxic Aqueous Conditions. *XXXXI Lunar and Planet. Sci.* [CD-ROM], abstract 1403.
125. **Zolotov, M. Yu.** (2010) Chemistry of Magmatic Volatiles and Explosive Volcanism on Mercury. *XXXXI Lunar and Planet. Sci.* [CD-ROM], abstract 1246.
124. **Zolotov, M. Yu.** (2009) Dry Sources of Plume Emissions on Enceladus. *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., abstract P42A-06.
123. Rivkin, A. S., Castillo, J. C.; Abreu, N., Asphaug, E. I., Cheng, A. F.; Clark, B.E.; Cohen, B. A.; Conrad, P. G., Hayne, P. O., Howell, E. S., Johnson, T.V., Kramer, G. Y., Lebofsky, L. A., Li, J., Lim L. F., Lovell, A. J., Matson, D., McCord, T.B., McFadden, L., McKinnon, W. B., Milliken, R., Moore, W. B., Roberts, J. H., Russell, C. T., Schmidt, B.E., Sykes, M.V., Thomas, P. C., and **Zolotov, M. Y.** (2009) The Case for Ceres: Report to the Planetary Science Decadal Survey Committee. *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., abstract P52A-08.
122. *McAdam, A. C., **Zolotov, M. Yu.**, Mironenko, M. V., and Sharp, T. G. (2009) Effect of Temperature on Silica Formation during Acid-Basalt Alteration: chemical Equilibrium Constraints. In *Workshop on Modeling Martian Hydrous Environments*. LPI Contribution No. 1482, Lunar and Planetary Institute, Houston, 44-45.
121. **Zolotov, M. Yu.** (2009) Aqueous Chemical Processes in Mars' History. In *Workshop on Modeling Martian Hydrous Environments*. LPI Contribution No. 1482, Lunar and Planetary Institute, Houston, 79-80.
120. **Zolotov, M. Yu.** (2009) Ceres: A Case for Porous, Undifferentiated, and Non-Icy Hydrated Body. *XXXX Lunar and Planet. Sci.* [CD-ROM], abstract 2329.
119. **Zolotov, M. Yu.**, and Mironenko, M. V. (2009) On the Composition of Putative Oceans on Early Venus. In *Workshop on Venus Geochemistry: Progress, Prospects, and New Missions*, LPI Contribution 1470, Lunar and Planetary Institute, Houston, 53-54.
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