



## Jonathan Stebbins

Professor of Geological Sciences, Emeritus

### Bio

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#### ACADEMIC APPOINTMENTS

- Emeritus (Active) Professor, Geological Sciences
- Affiliate, Precourt Institute for Energy

#### ADMINISTRATIVE APPOINTMENTS

- Postdoctoral Fellow, Lawrence Berkeley Laboratory, (1984-1985)
- Assistant Professor of Geology, Stanford University, (1985-1990)
- Associate Professor of Geology, Stanford University, (1990-1993)
- Associate Professor Geological & Environmental Sciences, Stanford University, (1993-1996)
- Associate Dean for Academic Affairs, School of Earth Sciences, (1996-1999)
- Professor Geological & Environmental Sciences, Stanford University, (1996- present)
- Professor by Courtesy Materials Science and Engineering, Stanford University, (1997- present)
- Chariman, Dept. of Geological and Environmental Sciences, (1999-2004)
- Chairman, Dept. of Geological and Environmental Sciences, (2009-2012)
- member, University Committee on Postdoctoral Scholars, (2009-2010)
- member, School of Earth Sciences Council, (2012-2015)
- member, Faculty Senate Committee on Undergraduate Standard and Policies (C-USP), (2012-2014)

#### HONORS AND AWARDS

- Graduate Fellow, National Science Foundation (1977 - 1980)
- Member, National Science Foundation, Presidential Young Investigators (1986-1991)
- Fellow, American Ceramic Society (19--)
- Fellow, American Geophysical Union (19--)
- Fellow, Mineralogical Society of America (1990)
- Mineralogical Society of America Award, Mineralogical Society of America (1992)
- G.W. Morey Award, Glass and Optical Materials Division of the American Ceramic Society (1995)
- Fellow in Undergraduate Education, Bass University (2003-2008)
- Geochemistry Fellow, Geochemical Society and European Association of Geochemistry (2009)
- Bunsen Medal, European Geosciences Union (2009)

## BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, School of Earth Sciences Computer Committee, Stanford University (1987 - 1999)
- Associate Editor, *American Mineralogist* (1990 - 1999)
- Freshman Advisor, Stanford University (1991 - 1999)
- Member, Earth Systems Steering Committee, Stanford University (1991 - 2002)
- Organizer (with D. Dingwell and P. McMillan), MSA Short Course "Structure, Dynamics and Properties of Silicate Melts" (1995 - 1995)
- Councillor, Mineralogical Society of America (1995 - 1997)
- University Undergraduate Advisory Council, Stanford University (1996 - 1999)
- Associate Dean for Academic Affairs, School of Earth Sciences, Stanford University (1996 - 1999)
- Member, Earth Sciences Council, Stanford University (1996 - 2007)
- Faculty Senate, Stanford University (1997 - 1999)
- Chairman, Dept. of Geological & Environmental Sciences, Stanford University (1999 - 2004)
- Invited speaker, International Silicate Melts Workshop (1999 - 1999)
- Invited speaker:, Conference on NMR in Earth Sciences, Cambridge University (2000 - 2000)
- Invited Speaker, Corning Science Fellows Conference; Goldschmidt Conference in Geochemistry; ACS Rocky Mountain Conference on Analytical Chemistry; Varian NMR User's Conference; NSF Workshop on Solid-State Chemistry; Varian, Inc. NMR Group Seminar (2001 - 2001)
- Marsh O'Neill Award Committee, Stanford University (2001 - 2001)
- Member, Materials Council, Stanford University (2002 - 2006)
- Member, Judicial Affairs Board, Stanford University (2002 - 2003)
- Invited Speaker, American Ceramic Society National Meeting; Goldschmidt Conference on Geochemistry; International Mineralogical Association; Virginia Polytechnic Institute (2002 - 2002)
- Invited Speaker, Goldschmidt Conference on Geochemistry (2003 - 2003)
- Invited speaker, American Ceramic Society, Glass and Optical Materials Mtg.; AGU session on melt structure and properties; Plenary lecture: European Conference on Mineralogy and Spectroscopy (2004 - 2004)
- Chairman, School Undergraduate Program Committee, Stanford University (2004 - 2005)
- Invited Speaker, COMPRES workshop on high pressure melts, Albuquerque NM; Saint-Gobain Glass Research Center, Paris; Centre de Recherche sur les Matériaux à Haute Température, Orléans, France; Symposium on Structure and Properties of Silicate Glasses and Melts, Institut de Physique du Globe de Paris (2005 - 2005)
- Member, NSF review panel (2005 - 2005)
- Invited seminar, Centre de Recherche sur les Matériaux à Haute Température, Orleans, France (2005 - 2005)
- Humgrove Lecturer, University of Utrecht (2005 - 2005)
- Invited speaker, European Geophysical Union (2005 - 2005)
- Committee of Visitors, NSF Division of Materials Research (2005 - 2005)
- Plenary speaker, Silicate Melt Workshop, Ludwig-Maximilians-University, Munich (2005 - 2005)
- Guest Editor (with Roberto Moretti and Pascal Richet), Silicate Melts volume of "Chemical Geology" (2005 - 2005)
- Invited speaker, International Mineralogical Association conference; Materials Research Society national meeting (2006 - 2006)
- Guest editor (with G. Henderson and G. Calas), "Glasses and Melts" issue of "Elements" magazine (2006 - 2006)
- Allan Cox Medal committee, Stanford University (2007 - 2007)
- Invited Speaker, Canadian Society of Chemistry annual mtg., 5th Alpine NMR conference, 8th Silicate Melt Workshop, DOE Geofluids Workshop (2007 - 2007)
- Invited Speaker, Rocky Mountain Conference on Analytical Chemistry (2008 - 2008)
- Member, Nanoscale Sciences and Engineering Shared Facilities Program Committee (2008 - present)

- Chairman, Dept. of Geological and Environmental Sciences, Stanford University (2009 - 2012)
- Member, University Committee on Postdoctoral Scholars, Stanford University (2009 - 2010)
- Invited speaker, European Geosciences Union (Bunsen Medal Lecture); U.C. Davis, Dept. of Geology; PacRim Conference on Ceramic and Glass Technology; Institut de Physique du Globe, Paris; IUPAC Int. Conf. on High Temperature Chemistry (2009 - 2009)
- Invited speaker, Glass and Optical Materials Div., American Ceramic Society, annual mtg.; keynote speaker, Goldschmidt Conference on Geochemistry (2010 - 2010)
- Invited speaker, Glass and Optical Materials Div., American Ceramic Society, annual mtg.; NSF Workshop on Emerging Research in Ceramics, Carbon, Glasses and Composites; Vaughan Symposium, Rocky Mt. Conference on Analytical Chemistry; AGU annual mtg (2012 - 2012)
- keynote speaker, Goldschmidt Conference on Geochemistry; (2012 - 2012)
- Member, School of Earth Sciences Council, Stanford University (2012 - present)
- Invited Speaker, Corning "Realizing the Vision" symposium (2015 - present)
- Member, Faculty Senate Committee on Undergraduate Standards and Policy (C-USP), Stanford University (2012 - present)
- Invited Speaker, Corning Glass Research Summit (2014 - 2014)

## PROFESSIONAL EDUCATION

- PhD, UC Berkeley , Geology (1983)
- M.A., University of California, Berkeley , Geology (1980)
- A.B., Harvard University , Geological Sciences (1977)

## LINKS

- Silicate Materials and Solid State NMR Group: <http://geo-nmr.stanford.edu/>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

#### Research

My research is focused on the measurement of the structure and dynamics in (mostly) inorganic materials, with the goal of understanding and predicting their thermodynamic and transport properties. These in turn fundamentally control a wide range of geological and technological phenomena. My students, postdocs, and I work primarily on disordered materials, including minerals, glassy and molten silicates and oxides, and ceramics. Our primary research tool is nuclear magnetic resonance (NMR). The materials that we study come from the natural laboratory of the Earth or are synthesized in our own labs. The problems that we address are tied to large-scale processes in geology and geophysics, as well as to those in high-tech industries. Among the former are the mechanisms of viscous flow in magmas and of solid solution in minerals from the crust to the lower mantle; among the latter are the optimization of glasses for flat screen computer displays and optical data transmission and of oxide ceramics for fuel cells.

#### Teaching

I have long taught a course in introductory geochemistry for undergrads at the beginnings of their careers in Earth sciences. Topics range from the formation of the chemical elements in stellar interiors, to high pressure and temperature phase equilibria, to aqueous solution chemistry, formation of oil and coal, and even the origin of life. At the advanced level I give a course on thermodynamics and structure of minerals and melts aimed at all graduate students who work with these "geomaterials." Recently I have begun teaching a course for advanced undergrads and for grad students on igneous processes.

#### Professional Activities

Geochemical Society Fellow (2009); European Geosciences Union Bunsen Medal (2009); American Ceramic Society Morey Award (1995); Mineralogical Society of America Award (1992); NSF Presidential Young Investigator (1986-91); associate dean, School of Earth Sciences (1996-1999); chair, GES (1999-2004); participation

in professional societies, scientific conferences, and proposal and journal reviews in geochemistry, geophysics, mineralogy, inorganic chemistry, glass science, ceramics, and solid-state NMR

## Teaching

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### COURSES

#### 2019-20

- Igneous Processes: GEOLSCI 180, GEOLSCI 280 (Spr)
- Thermodynamics and Disorder in Minerals and Melts: GEOLSCI 262 (Spr)

#### 2018-19

- Igneous Processes: GEOLSCI 180, GEOLSCI 280 (Spr)
- Introduction to Geochemistry: EARTHSYS 90, GEOLSCI 90 (Win)

#### 2017-18

- Igneous Processes: GS 180, GS 280 (Spr)
- Introduction to Geochemistry: GS 90 (Win)

#### 2016-17

- Igneous Processes: GS 180, GS 280 (Spr)
- Introduction to Geochemistry: GS 90 (Win)

### STANFORD ADVISEES

#### Orals Chair

Melissa Wette

## Publications

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### PUBLICATIONS

- **Tuning the bandgap of Cs<sub>2</sub>AgBiBr<sub>6</sub> through dilute tin alloying** *CHEMICAL SCIENCE*  
Lindquist, K. P., Mack, S. A., Slavney, A. H., Leppert, L., Gold-Parker, A., Stebbins, J. F., Salleo, A., Toney, M. F., Neaton, J. B., Karunadasa, H. I.  
2019; 10 (45): 10620–28
- **Pentacoordinated and hexacoordinated silicon cations in a potassium silicate glass: Effects of pressure and temperature** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Stebbins, J. F., Bistal, S.  
2019; 505: 234–40
- **Pentacoordinated silicon in ambient pressure potassium and lithium silicate glasses: temperature and compositional effects and analogies to alkali borate and germanate systems** *J. Non-Cryst. Solids: X*  
Stebbins, J. F.  
2019; 1: 100012-1-12
- **Toward the wider application of Si-29 NMR spectroscopy to paramagnetic transition metal silicate minerals and glasses: Fe(II), Co(II), and Ni(II) silicates** *AMERICAN MINERALOGIST*  
Stebbins, J. F., McCarty, R. J., Palke, A. C.  
2018; 103 (5): 776–91
- **NMR at high temperature** *Modern Methods in Solids State NMR: A Practitioner's Guide*  
Stebbins, J. F.  
edited by Hodgkinson, P.  
2018

- **Structural changes in calcium aluminoborosilicate glasses recovered from pressures of 1.5 to 3 GPa: Interactions of two network species with coordination number increases** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Bista, S., Stebbins, J. F., Wu, J., Gross, T. M.  
2017; 478: 50–57
- **Toward the wider application of Si-29 NMR spectroscopy to paramagnetic transition metal silicate minerals: Copper(II) silicates** *AMERICAN MINERALOGIST*  
Stebbins, J. F.  
2017; 102 (12): 2406–14
- **Bond length-bond angle correlation in densified silica-Results from O-17 NMR spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*  
Trease, N. M., Clark, T. M., Grandinetti, P. J., Stebbins, J. F., Sen, S.  
2017; 146 (18)
- **Solid-state NMR and short-range order in crystalline oxides and silicates: a new tool in paramagnetic resonances.** *Acta crystallographica. Section C, Structural chemistry*  
Stebbins, J. F., McCarty, R. J., Palke, A. C.  
2017; 73: 128-136
- **Constraints on aluminum and scandium substitution mechanisms in forsterite, periclase, and larnite: high resolution NMR** *American Mineralogist*  
McCarty, R. J., Stebbins, J. F.  
2017; 102: 1244-1253
- **Multinuclear NMR investigation of temperature effects on structural reactions involving non-bridging oxygens in multicomponent oxide glasses** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Morin, E. I., Stebbins, J. F.  
2017; 471: 179-186
- **The role of modifier cations in network modifier cation coordination increases with pressure in aluminosilicate glasses and melts from 1 to 3 GPa** *Am Mineral.*  
Bista, S., Stebbins, J.  
2017; 102: 1657-1666
- **Structural investigation of hydrous sodium borosilicate glasses** *J. Non-Cryst. Solids*  
Bauer, U., Behrens, H., Reinsch, S., Morin, E. i., Stebbins, J. F.  
2017; 465: 39-48
- **“Free” oxide ions in silicate melts: thermodynamic considerations and probable effects of temperature** *Chemical Geology*  
Stebbins, J. F.  
2017; 461: 2-12
- **Investigating lanthanide dopant distributions in Yttrium Aluminum Garnet (YAG) using solid state paramagnetic NMR.** *Solid state nuclear magnetic resonance*  
McCarty, R. J., Stebbins, J. F.  
2016; 79: 11-22
- **Network oxygen sites in calcium aluminoborosilicate glasses: Results from O-17{Al-27} and O-17{B-11} double resonance NMR** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
LaComb, M., Rice, D., Stebbins, J. F.  
2016; 447: 248-254
- **Detection of "free" oxide ions in low-silica Ca/Mg silicate glasses: Results from O-17 -> Si-29 HETCOR NMR** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Hung, I., Gan, Z., Gor'kov, P. L., Kaseman, D. C., Sen, S., LaComb, M., Stebbins, J. F.  
2016; 445: 1-6
- **Transition Metal Dopant Cation Distributions in MgO and CaO: New Inferences from Paramagnetically Shifted Resonances in O-17, Mg-25, and Ca-43 NMR Spectra** *JOURNAL OF PHYSICAL CHEMISTRY C*  
McCarty, R. J., Stebbins, J. F.  
2016; 120 (20): 11111-11120
- **Order, disorder and mixing: The atomic structure of amorphous mixtures of titania and tantalum** *JOURNAL OF NON-CRYSTALLINE SOLIDS*

Bassiri, R., Abernathy, M. R., Liou, F., Mehta, A., Gustafson, E. K., Hart, M. J., Isa, H. N., Kim, N., Lin, A. C., MacLaren, I., Martin, I. W., Route, R. K., Rowan, et al  
2016; 438: 59-66

- **Glass structure, melt structure, and dynamics: Some concepts for petrology** *AMERICAN MINERALOGIST*  
Stebbins, J. F.  
2016; 101 (3-4): 753-768
- **Response of complex networks to compression: Ca, La, and Y aluminoborosilicate glasses formed from liquids at 1 to 3 GPa pressures.** *journal of chemical physics*  
Bista, S., Morin, E. I., Stebbins, J. F.  
2016; 144 (4): 044502-?
- **Separating the effects of composition and fictive temperature on Al and B coordination in Ca, La, Y aluminosilicate, aluminoborosilicate and aluminoborate glasses** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Morin, E. I., Stebbins, J. F.  
2016; 432: 384-392
- **Structure of amorphous silica-hafnia and silica-zirconia thin-film materials: The role of a metastable equilibrium state in non-glass-forming oxide systems** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Kim, N., Bassiri, R., Fejer, M. M., Stebbins, J. F.  
2015; 429: 5-12
- **Tricluster oxygen atoms in crystalline and glassy SrB<sub>4</sub>O<sub>7</sub>: High resolution B-11 and O-17 nuclear magnetic resonance analysis** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
LaComb, M., Stebbins, J. F.  
2015; 428: 105-111
- **Aluminosilicate melts and glasses at 1 to 3 GPa: Temperature and pressure effects on recovered structural and density changes** *AMERICAN MINERALOGIST*  
Bista, S., Stebbins, J. F., Hankins, W. B., Sisson, T. W.  
2015; 100 (10): 2298-2307
- **An investigation of local Fe<sup>2+</sup> order-disorder in a mantle grosspyrite garnet using paramagnetically shifted Al-27 and Si-29 MAS NMR resonances** *EUROPEAN JOURNAL OF MINERALOGY*  
Palke, A. C., Geiger, C. A., Stebbins, J. F.  
2015; 27 (4): 463-470
- **Transition metal cation site preferences in forsterite (Mg<sub>2</sub>SiO<sub>4</sub>) determined from paramagnetically shifted NMR resonances** *AMERICAN MINERALOGIST*  
McCarty, R. J., Palke, A. C., Stebbins, J. F., Hartman, J. S.  
2015; 100 (5-6): 1265-1276
- **Order within disorder: The atomic structure of ion-beam sputtered amorphous tantalum (a-Ta<sub>2</sub>O<sub>5</sub>)** *APL MATERIALS*  
Bassiri, R., Liou, F., Abernathy, M. R., Lin, A. C., Kim, N., Mehta, A., Shyam, B., Byer, R. L., Gustafson, E. K., Hart, M., MacLaren, I., Martin, I. W., Route, et al  
2015; 3 (3)
- **Cation order-disorder in Fe-bearing pyrope and grossular garnets: A Al-27 and Si-29 MAS NMR and Fe-57 Mossbauer spectroscopy study** *AMERICAN MINERALOGIST*  
Palke, A. C., Stebbins, J. F., Geiger, C. A., Tippelt, G.  
2015; 100 (2-3): 536-547
- **The structure of ion beam sputtered amorphous alumina films and effects of Zn doping: High-resolution Al-27 NMR** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Kim, N., Bassiri, R., Fejer, M. M., Stebbins, J. F.  
2014; 405: 1-6
- **Cation Field Strength Effects on Boron Coordination in Binary Borate Glasses** *JOURNAL OF THE AMERICAN CERAMIC SOCIETY*  
Wu, J., Stebbins, J. F.  
2014; 97 (9): 2794-2801
- **Modifier cation (Ba, Ca, La, Y) field strength effects on aluminum and boron coordination in aluminoborosilicate glasses: the roles of fictive temperature and boron content** *APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING*

Morin, E. I., Wu, J., Stebbins, J. F.

2014; 116 (2): 479-490

- **NMR spectroscopy in inorganic Earth materials** *Spectroscopic Methods in Mineralogy and Materials Sciences*  
Stebbins, J. F., Xue, X.  
edited by Henderson, G. S., Neuvill, D., Downs, R. T.  
Mineralogical Society of America. 2014: 605–653
- **(31)P magic angle spinning NMR study of flux-grown rare-Earth element orthophosphate (monazite/xenotime) solid solutions: evidence of random cation distribution from paramagnetically shifted NMR resonances.** *Inorganic chemistry*  
Palke, A. C., Stebbins, J. F., Boatner, L. A.  
2013; 52 (21): 12605-12615
- **Interaction between composition and temperature effects on non-bridging oxygen and high-coordinated aluminum in calcium aluminosilicate glasses** *AMERICAN MINERALOGIST*  
Thompson, L. M., Stebbins, J. F.  
2013; 98 (11-12): 1980-1987
- **Effects of annealing on the structure of ion beam sputtered amorphous tantalum oxide: Oxygen-17 NMR spectra and relaxation times** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Kim, N., Stebbins, J. F.  
2013; 378: 158-162
- **Tunable plasticity in amorphous silicon carbide films.** *ACS applied materials & interfaces*  
Matsuda, Y., Kim, N., King, S. W., Bielefeld, J., Stebbins, J. F., Dauskardt, R. H.  
2013; 5 (16): 7950-7955
- **Interactions between network cation coordination and non-bridging oxygen abundance in oxide glasses and melts: Insights from NMR spectroscopy** *CHEMICAL GEOLOGY*  
Stebbins, J. F., Wu, J., Thompson, L. M.  
2013; 346: 34-46
- **Oxide ion speciation in potassium silicate glasses: New limits from O-17 NMR** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Stebbins, J. F., Sen, S.  
2013; 368: 17-22
- **Temperature and modifier cation field strength effects on aluminoborosilicate glass network structure** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Wu, J., Stebbins, J. F.  
2013; 362: 73-81
- **Challenges in Ceramic Science: A Report from the Workshop on Emerging Research Areas in Ceramic Science** *JOURNAL OF THE AMERICAN CERAMIC SOCIETY*  
Rohrer, G. S., Affatigato, M., Backhaus, M., Bordia, R. K., Chan, H. M., Curtarolo, S., Demkov, A., Eckstein, J. N., Faber, K. T., Garay, J. E., Gogotsi, Y., Huang, L., Jones, et al  
2012; 95 (12): 3699-3712
- **Incorporation of Fe and Al in MgSiO<sub>3</sub> perovskite: An investigation by Al-27 and Si-29 NMR spectroscopy** *AMERICAN MINERALOGIST*  
Palke, A. C., Stebbins, J. F., Frost, D. J., McCammon, C. A.  
2012; 97 (11-12): 1955-1964
- **Estimating accuracy of O-17 NMR measurements in oxide glasses: Constraints and evidence from crystalline and glassy calcium and barium silicates** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Thompson, L. M., McCarty, R. J., Stebbins, J. F.  
2012; 358 (22): 2999-3006
- **Properties of impurity-bearing ferrihydrite I. Effects of Al content and precipitation rate on the structure of 2-line ferrihydrite** *GEOCHIMICA ET COSMOCHIMICA ACTA*  
Cismasu, A. C., Michel, F. M., Stebbins, J. F., Levard, C., Brown, G. E.  
2012; 92: 275-291

- **Non-stoichiometric non-bridging oxygens and five-coordinated aluminum in alkaline earth aluminosilicate glasses: Effect of modifier cation size** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Thompson, L. M., Stebbins, J. F.  
2012; 358 (15): 1783-1789
- **Natural hydrous amorphous silica: Quantitation of network speciation and hydroxyl content by Si-29 MAS NMR and vibrational spectroscopy** *AMERICAN MINERALOGIST*  
Chemtob, S. M., Rossman, G. R., Stebbins, J. F.  
2012; 97 (1): 203-211
- **Quadrupolar NMR in the Earth Sciences** *NMR of Quadrupolar Nuclei in Solid Materials, and Encyclopedia of Magnetic Resonance (online publication)*  
Stebbins, J. F.  
edited by Wasylishen, R. E., Ashbrook, S. E., Wimperis, S.  
John Wiley & Sons, Ltd..2012: 387-400
- **High-temperature in situ B-11 NMR study of network dynamics in boron-containing glass-forming liquids** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Wu, J., Potuzak, M., Stebbins, J. F.  
2011; 357 (24): 3944-3951
- **Temperature calibration for high-temperature MAS NMR to 913 K: Cu-63 MAS NMR of CuBr and CuI, and Na-23 MAS NMR of NaNbO3** *SOLID STATE NUCLEAR MAGNETIC RESONANCE*  
Wu, J., Kim, N., Stebbins, J. F.  
2011; 40 (2): 45-50
- **Structure of Amorphous Tantalum Oxide and Titania-Doped Tantalum: O-17 NMR Results for Sol-Gel and Ion-Beam-Sputtered Materials** *CHEMISTRY OF MATERIALS*  
Kim, N., Stebbins, J. F.  
2011; 23 (15): 3460-3465
- **Paramagnetic interactions in the P-31 NMR spectroscopy of rare earth element orthophosphate (REPO4, monazite/xenotime) solid solutions** *AMERICAN MINERALOGIST*  
Palke, A. C., Stebbins, J. F.  
2011; 96 (8-9): 1343-1353
- **Variable-temperature Al-27 and Si-29 NMR studies of synthetic forsterite and Fe-bearing Dora Maira pyrope garnet: Temperature dependence and mechanisms of paramagnetically shifted peaks** *AMERICAN MINERALOGIST*  
Palke, A. C., Stebbins, J. F.  
2011; 96 (7): 1090-1099
- **Raman, Brillouin, and nuclear magnetic resonance spectroscopic studies on shocked borosilicate glass** *JOURNAL OF APPLIED PHYSICS*  
Manghnani, M. H., Hushur, A., Sekine, T., Wu, J., Stebbins, J. F., Williams, Q.  
2011; 109 (11)
- **Non-bridging oxygen and high-coordinated aluminum in metaluminous and peraluminous calcium and potassium aluminosilicate glasses: High-resolution O-17 and Al-27 MAS NMR results** *AMERICAN MINERALOGIST*  
Thompson, L. M., Stebbins, J. F.  
2011; 96 (5-6): 841-853
- **Quench rate and temperature effects on boron coordination in aluminoborosilicate melts** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Wu, J., Stebbins, J. F.  
2010; 356 (41-42): 2097-2108
- **Silicon coordination in rutile and TiO2-II at ambient and high pressures: Si-29 NMR** *AMERICAN MINERALOGIST*  
Mosenfelder, J. L., Kim, N., Stebbins, J. F.  
2010; 95 (7): 968-973
- **Probing the electrical properties of highly-doped Al:ZnO nanowire ensembles** *JOURNAL OF APPLIED PHYSICS*  
Noriega, R., Rivnay, J., Goris, L., Kaelblein, D., Klauk, H., Kern, K., Thompson, L. M., Palke, A. C., Stebbins, J. F., Jokisaari, J. R., Kusinski, G., Salleo, A.  
2010; 107 (7)



- **Effects of e-beam curing on glass structure and mechanical properties of nanoporous organosilicate thin films** *INTERNATIONAL JOURNAL OF MATERIALS RESEARCH*  
Gage, D. M., Peng, L., Stebbins, J., Yim, K. S., Al-Bayati, A., Demos, A., Dauskardt, R. H.  
2010; 101 (2): 228-235
- **Structural response of a highly viscous aluminoborosilicate melt to isotropic and anisotropic compressions** *JOURNAL OF CHEMICAL PHYSICS*  
Wu, J., Deubener, J., Stebbins, J. F., Grygarova, L., Behrens, H., Wondraczek, L., Yue, Y.  
2009; 131 (10)
- **Simultaneous aluminum, silicon, and sodium coordination changes in 6 GPa sodium aluminosilicate glasses** *AMERICAN MINERALOGIST*  
Kelsey, K. E., Stebbins, J. F., Mosenfelder, J. L., Asimow, P. D.  
2009; 94 (8-9): 1205-1215
- **Confirmation of octahedrally coordinated phosphorus in AlPO<sub>4</sub>-containing stishovite by P-31 NMR** *EUROPEAN JOURNAL OF MINERALOGY*  
Stebbins, J. F., Kim, N., Brunet, F., Irifune, T.  
2009; 21 (4): 667-671
- **Cation field strength effects on high pressure aluminosilicate glass structure: Multinuclear NMR and La XAFS results** *GEOCHIMICA ET COSMOCHIMICA ACTA*  
Kelsey, K. E., Stebbins, J. F., Singer, D. M., Brown, G. E., Mosenfelder, J. L., Asimow, P. D.  
2009; 73 (13): 3914-3933
- **Forsterite, hydrous and anhydrous wadsleyite and ringwoodite (Mg<sub>2</sub>SiO<sub>4</sub>): Si-29 NMR results for chemical shift anisotropy, spin-lattice relaxation, and mechanism of hydration** *AMERICAN MINERALOGIST*  
Stebbins, J. F., Smyth, J. R., Panero, W. R., Frost, D. J.  
2009; 94 (7): 905-915
- **Effects of cation field strength on the structure of aluminoborosilicate glasses: High-resolution B-11, Al-27 and Na-23 MAS NMR** *JOURNAL OF NON-CRYSTALLINE SOLIDS*  
Wu, J., Stebbins, J. F.  
2009; 355 (9): 556-562
- **Forsterite, wadsleyite, and ringwoodite (Mg<sub>2</sub>SiO<sub>4</sub>): Si-29 NMR constraints on structural disorder and effects of paramagnetic impurity ions** *AMERICAN MINERALOGIST*  
Stebbins, J. F., Panero, W. R., Smyth, J. R., Frost, D. J.  
2009; 94 (4): 626-629
- **Effects of the degree of polymerization on the structure of sodium silicate and aluminosilicate glasses and melts: An O-17 NMR study** *GEOCHIMICA ET COSMOCHIMICA ACTA*  
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