



# American Mineralogist

Vol. 97, No. 4

An International Journal of Earth and Planetary Materials

April 2012

## LETTERS

- 755** Electron backscatter diffraction (EBSD) analyses of phyllosilicates in petrographic thin sections  
Sayako Inoue and Toshihiro Kogure

## ARTICLES

- 489** Veatchite: Structural relationships of the three polytypes  
Joel D. Grice and Allan Pring
- 496** Falsterite,  $\text{Ca}_2\text{MgMn}_2^{2+}(\text{Fe}_{0.5}^{2+}\text{Fe}_{0.5}^{3+})_4\text{Zn}_4(\text{PO}_4)_8(\text{OH})_4(\text{H}_2\text{O})_{14}$ , a new secondary phosphate mineral from the Palermo No. 1 pegmatite, North Groton, New Hampshire  
Anthony R. Kampf, Stuart J. Mills, William B. Simmons, James W. Nizamoff, and Robert W. Whitmore
- 503** Pavlovskyite  $\text{Ca}_8(\text{SiO}_4)_2(\text{Si}_3\text{O}_{10})$ : A new mineral of altered silicate-carbonate xenoliths from the two Russian type localities, Birkhin massif, Baikal Lake area and Upper Chegem caldera, North Caucasus  
Evgeny V. Galuskin, Frank Gfeller, Valentina B. Savelyeva, Thomas Armbruster, Biljana Lazic, Irina O. Galuskina, Daniel M. Töbrens, Aleksandr E. Zadov, Piotr Dzierzanowski, Nikolai N. Pertsev, and Viktor M. Gazeev
- 513** Zaccagnaite-3R, a new Zn-Al hydrotalcite polytype from El Soplao cave (Cantabria, Spain)  
Rafael P. Lozano, Carlos Rossi, Ángel La Iglesia, and Emilio Matesanz
- 524** Incorporation of Si into  $\text{TiO}_2$  phases at high pressure  
Alberto Escudero and Falko Langenhorst
- 532** TOF-SIMS and electron microprobe investigations of zoned magmatic orthopyroxenes: First results of trace and minor element analysis with implications for diffusion modeling  
Kate Saunders, Stefan Rinnen, Jon Blundy, Ralf Dohmen, Stephan Klemme, and Heinrich F. Arlinghaus
- 543** Titanium in muscovite, biotite, and hornblende: Modeling, thermometry, and rutile activities of metapelites and amphibolites  
Jennifer A. Chambers and Matthew J. Kohn
- 556** Polysaccharide-catalyzed nucleation and growth of disordered dolomite: A potential precursor of sedimentary dolomite  
Fangfu Zhang, Huifang Xu, Hiromi Konishi, Evgenya S. Shelobolina, and Eric E. Roden
- 568** High-pressure and high-temperature phase transitions in  $\text{FeTiO}_3$  and a new dense  $\text{FeTi}_3\text{O}_7$  structure  
Daisuke Nishio-Hamane, Meiguang Zhang, Takehiko Yagi, and Yanming Ma
- 573** Compressibility and thermal expansion of hydrous ringwoodite with 2.5(3) wt%  $\text{H}_2\text{O}$   
Yu Ye, David A. Brown, Joseph R. Smyth, Wendy R. Panero, Steven D. Jacobsen, Yun-Yuan Chang, Joshua P. Townsend, Sylvia-Monique Thomas, Erik H. Hauri, Przemyslaw Dera, and Daniel J. Frost
- 583** Vibrational and elastic properties of ferromagnesite across the electronic spin-pairing transition of iron  
Jung-Fu Lin, Jin Liu, Caleb Jacobs, and Vitali B. Prakapenka
- 592** Electronic spin states of ferric and ferrous iron in the lower-mantle silicate perovskite  
Jung-Fu Lin, Ercan E. Alp, Zhu Mao, Toru Inoue, Catherine McCammon, Yuming Xiao, Paul Chow, and Jiyong Zhao
- 598** Experimental VNIR reflectance spectroscopy of gypsum dehydration: Investigating the gypsum to bassanite transition  
Tanya N. Harrison
- 610** Nature of rehydroxylation in dioctahedral 2:1 layer clay minerals  
Arkadiusz Derkowski, Victor A. Drits, and Douglas K. McCarty

- 630 Thermal behavior of afghanite, an ABABACAC member of the cancrinite group**  
Paolo Ballirano and Ferdinando Bosi
- 641 Experimental incorporation of Th into xenotime at middle to lower crustal *P-T* utilizing alkali-bearing fluids**  
Daniel E. Harlov and Richard Wirth
- 653 Sol-gel synthesis of nanocrystalline fayalite (Fe<sub>2</sub>SiO<sub>4</sub>)**  
Michael T. DeAngelis, Adam J. Rondinone, Michelle D. Pawel, Theodore C. Labotka, and Lawrence M. Anovitz
- 657 The heat capacity of fayalite at high temperatures**  
Artur Benisek, Herbert Kroll, and Edgar Dachs
- 661 Structural trends for celestite (SrSO<sub>4</sub>), anglesite (PbSO<sub>4</sub>), and barite (BaSO<sub>4</sub>): Confirmation of expected variations within the SO<sub>4</sub> groups**  
Sytle M. Antao
- 666 The dehydroxylation of serpentine group minerals**  
Alessandro F. Gualtieri, Carlotta Giacobbe, and Cecilia Viti
- 681 Formation of nanoscale Th-coffinite**  
Artur P. Deditius, Véronique Pointeau, Jiaming M. Zhang, and Rodney C. Ewing
- 694 Magnetic and low-temperature structural behavior of clinopyroxene-type FeGeO<sub>3</sub>: A neutron diffraction, magnetic susceptibility, and <sup>57</sup>Fe Mössbauer study**  
Günther J. Redhammer, Anatoly Senyshyn, Gerold Tippelt, Clemens Pietzonka, Werner Treutmann, Georg Roth, and Georg Amthauer
- 707 Crystal structure and thermal expansion of aragonite-group carbonates by single-crystal X-ray diffraction**  
Yu Ye, Joseph R. Smyth, and Paul Boni
- 713 The lower-pressure stability of glaucophane in the presence of paragonite and quartz in the system Na<sub>2</sub>O-MgO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>-H<sub>2</sub>O**  
Ashley Michelle Basora, David M. Jenkins, and David L. Bish
- 727 Coralloite, Mn<sup>2+</sup>Mn<sup>3+</sup>(AsO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>·4H<sub>2</sub>O, a new mixed valence Mn hydrate arsenate: Crystal structure and relationships with bermanite and whitmoreite mineral groups**  
Athos Maria Callegari, Massimo Boiocchi, Marco E. Ciriotti, and Corrado Balestra
- 735 The crystal structure of metanatroautunite, Na[(UO<sub>2</sub>)(PO<sub>4</sub>)](H<sub>2</sub>O)<sub>3</sub>, from the Lake Boga Granite, Victoria, Australia**  
Stuart J. Mills, Anthony R. Kampf, and William D. Birch
- 739 Petedunnite (CaZnSi<sub>2</sub>O<sub>6</sub>): Stability and phase relations in the system CaO-ZnO-SiO<sub>2</sub>**  
Alexandra L. Huber, Soraya Heuss-Aßbichler, Karl Thomas Fehr, and Geoffrey D. Bromiley
- 750 Revision of the crystal structure and chemical formula of weeksite, K<sub>2</sub>(UO<sub>2</sub>)<sub>2</sub>(Si<sub>5</sub>O<sub>13</sub>)·4H<sub>2</sub>O**  
Karla Fejfarová, Jakub Plášil, Hexiong Yang, Jiří Čejka, Michal Dušek, Robert T. Downs, Madison C. Barkley, and Radek Škoda
- 759 NEW MINERAL NAMES**
- 762 BOOK REVIEW**

#### GOLD BENEFACTORS

Exxon/Mobil Upstream Research Company  
Gemological Institute of America  
Vulcan Materials—Corporate Office  
W.R. Grace & Co.  
The Hudson Institute of Mineralogy

#### SILVER BENEFACTORS

Blake Industries  
Bruker AXS, Inc.  
R.T. Vanderbilt Company, Inc.  
The Ash Grove Charitable Foundation