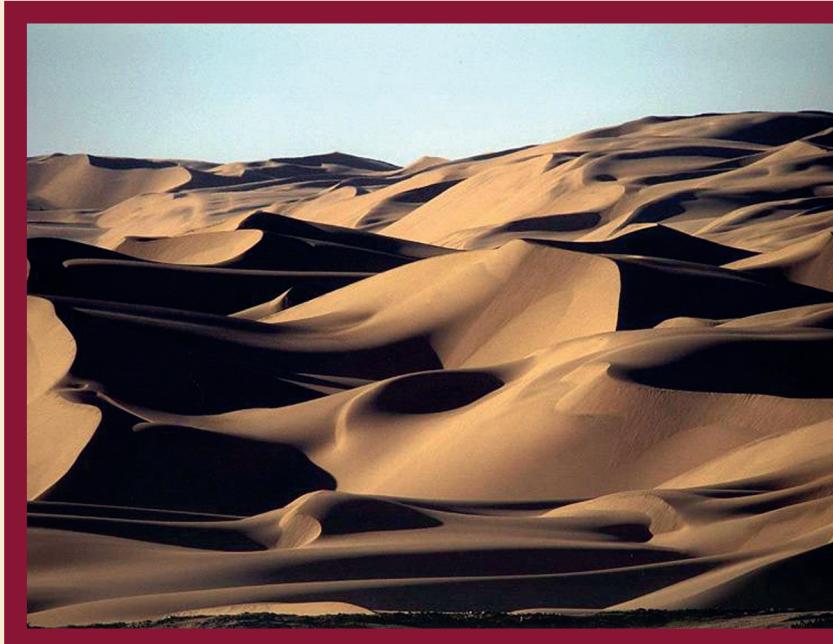
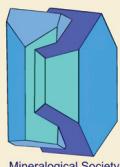


DECEMBER 2018

MINERALOGICAL JOURNAL OF MINERAL SCIENCES MAGAZINE



SUBMIT A PAPER ONLINE AT [HTTP://WWW.EDITORIALMANAGER.COM/MINMAG/](http://WWW.EDITORIALMANAGER.COM/MINMAG/)



Mineralogical Society

CAMBRIDGE
UNIVERSITY PRESS

MINERALOGICAL MAGAZINE

ISSN 0026-461X

Principal Editors

R. H. MITCHELL, *Department of Geology, Lakehead University, Thunder Bay,
Ontario P7B 5E1, Canada*

P. A. WILLIAMS, *University of Western Sydney, Locked Bag 1797, Penrith, NSW 2751, Australia
S. J. MILLS, Museum Victoria, Melbourne, Australia*

(Manuscripts should be submitted on-line at <http://www.editorialmanager.com/minmag/>)

Associate Editors

M. ARIMA, *Yokohama National University, Japan*

D. ATENCIO, *University of São Paulo, Brazil*

F. BOSI, *University of Rome, Italy*

S. BROOM-FENDLEY, *Camborne School of Mines, UK*

L. CAMPBELL, *University of Manchester, UK*

A. CHAKRABARTY, *Indian Institute of Science Education
and Research Tirupati, India*

A. G. CHRISTY, *Australian National University, Canberra,
Australia*

C. L. CORKHILL, *University of Sheffield, UK*

I. COULSON, *University of Regina, Canada*

G. DELLA VENTURA, *Università Roma Tre, Roma, Italy*

I. GALUSKINA, *University of Silesia, Poland*

G. D. GATTA, *Università degli Studi di Milano, Italy*

C. A. GEIGER, *University of Salzburg, Austria*

I. GRAHAM, *University of New South Wales, Australia*

E. S. GREW, *University of Maine, USA*

J. HARVEY, *University of Leeds, UK*

D. HIBBS, *University of Sydney, Australia*

A. R. KAMPF, *Natural History Museum of Los Angeles
County, USA*

S. KRIVOVICHEV, *St Petersburg State University, Russia*

F. LAUFER, *Czech Geological Survey, Czech Republic*

M. LEE, *Glasgow University, UK*

J. MAJZLAN, *University of Jena, Germany*

L. MELLUSO, *Università di Napoli Federico II, Italy*

K. MOMMA, *National Museum of Nature and Science,
Tokyo, Japan*

T. MUELLER, *University of Leeds, UK*

B. O'DRISCOLL, *University of Manchester, UK*

K. PFAFF, *Colorado School of Mines, Golden, USA*

M. J. RUMSEY, *Natural History Museum, London, UK*

O. SIIDRA, *St Petersburg State University, Russia*

C. D. STOREY, *University of Portsmouth, UK*

Reviews Editor: S. J. MILLS

Structures Editor: P. LEVERETT

Production Editor: H. C. KERBEY

MINERALOGICAL SOCIETY

[Registered Charity No. 233706]

Officers and Council for 2018

President: H. Downes

Treasurer: J. M. Adams *P.R.O.:* Philip Pogge von Strandmann *General Secretary:* J. M. Horák

Principal Editors of the Magazine: S. J. Mills, R. H. Mitchell, P. A. Williams

Principal Editor of 'Clay Minerals': G. E. Christidis

Ordinary Members of Council: M. Anand, A. Bird, J.F.W. Bowles, A. Bray, S. Broom-Fendley, C. Corkhill, S. Gibson, J. Harvey, H. Hughes, S.J. Kemp, C. Petrone, V. Phoenix, E. Tomlinson, A. Walker, C. Warren, M. Widdowson, D. Wray

Office address: 12 Baylis Mews, Amyand Park Road, Twickenham TW1 3HQ, UK

Website: www.minersoc.org

Tel.: +44 (0)20 8891 6600; *Fax:* +44 (0)20 8891 6599; *e-mail:* info@minersoc.org

Mineralogical Magazine is published six times per year in February, April, June, August, October and December. The Journal is now primarily an online one.

The subscription price (excluding VAT) to *Mineralogical Magazine* for volume 82 (2018), which includes print and electronic access, is £718 (USA, Canada and Mexico US\$930) and includes delivery by air; single parts are available at £138 (USA, Canada and Mexico US\$178) plus postage. The electronic-only price available to institutional subscribers is £556 (USA, Canada and Mexico US\$720). EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Orders, which must be accompanied by payment, may be sent to any bookseller or subscription agent or direct to the publishers: Cambridge University Press, UPH, Shaftesbury Road, Cambridge CB2 8BS, or in the USA, Canada, and Mexico to Cambridge University Press, Journals Fulfillment Department, 1 Liberty Plaza, Floor 20, New York, NY 10006, USA. Japanese Prices for institutions are available from Kinokuniya Company Ltd, P.O. Box 55, Chitose, Tokyo, Japan.

All subscription enquiries should be sent to: journals@cambridge.org

Front cover picture: Barchanoid dunes near Lüderitz, Karas Region, Namibia. A specimen of magnesio-hornblende collected in the sand dunes has been characterized as the type for this mineral. See Oberti *et al.* (this issue).

CONTENTS OF No. 543, December 2018

Page

EVGENY V. NAZARCHUK, OLEG I. SIIDRA, ATALI A. AGAKHANOV, EVGENIYA A. LUKINA, EVGENIYA Y. AVDONTSEVA and GENNADY A. KARPOV: Itelmenite, $\text{Na}_2\text{CuMg}_2(\text{SO}_4)_4$, a new anhydrous sulfate mineral from the Tolbachik volcano	1233
ANDREY P. SHABLINSKII, STANISLAV K. FILATOV, LIDYUA P. VERGASOVA, EUGENIYA YU. AVDONTSEVA and SVETLANA V. MOSKALEVA: Wrightite, $\text{K}_2\text{Al}_2\text{O}(\text{AsO}_4)_2$, a new oxo-orthoarsenate from the Second scoria cone, Northern Breakthrough, Great Fissure eruption, Tolbachik volcano, Kamchatka peninsula, Russia	1243
ROBERTA OBERTI, MASSIMO BOIOCCHI, FRANK C. HAWTHORNE and MARCO E. CIRIOTTI: Magnesio-hornblende from Lüderitz, Namibia: mineral description and crystal chemistry	1253
TRAVIS A. OLDS, JAKUB PLÁŠIL, ANTHONY R. KAMPF, PETER C. BURNS, BARBARA P. NASH, JOE MARTY, TIMOTHY P. ROSE and SHAWN M. CARLSON: Redcanyonite, $(\text{NH}_4)_2\text{Mn}[(\text{UO}_2)_4\text{O}_4(\text{SO}_4)_2](\text{H}_2\text{O})_4$, a new zippeite-group mineral from the Blue Lizard mine, San Juan County, Utah, USA	1261
MARTIN ONDREJKA, PETER BAČÍK, TOMÁŠ SOBOCKÝ, PAVEL UHER, RADEK ŠKODA, TOMÁŠ MIKUŠ, JARMILA LUPTÁKOVÁ and PATRIK KONEČNÝ: Minerals of the rhabdophane group and the alunite supergroup in microgranite: products of low-temperature alteration in a highly acidic environment from the Velence Hills, Hungary	1277
FRANK C. HAWTHORNE and ADAM PIECZKA: Classification of the minerals of the graftonite group	1301
ADAM PIECZKA, FRANK C. HAWTHORNE, NEIL BALL, YASSIR ABDU, BOŻENA GOŁĘBIOWSKA, ADAM WŁODEK and JAN ŻUKROWSKI: Graftonite-(Mn), ideally $M^1\text{Mn}^{M2,M3}\text{Fe}_2(\text{PO}_4)_2$, and graftonite-(Ca), ideally $M^1\text{Ca}^{M2,M3}\text{Fe}_2(\text{PO}_4)_2$, two new minerals of the graftonite group from Poland	1307
FRANK C. HAWTHORNE, MICHAEL A. WISE, PETR ČERNÝ, YASSIR A. ABDU, NEIL A. BALL, ADAM PIECZKA and ADAM WŁODEK: Beusite-(Ca), ideally $\text{CaMn}_2^{2+}(\text{PO}_4)_2$, a new graftonite-group mineral from the Yellowknife pegmatite field, Northwest Territories, Canada: Description and crystal structure	1323
JURAJ MAJZLAN, ULLA GRO NIELSEN, EDGAR DACHS, ARTUR BENISEK, PETR DRAHOTA, UWE KOLITSCH, JULIA HERRMANN, RALPH BOLANZ and MARTIN ŠTEVKO: Thermodynamic properties of mansfieldite ($\text{AlAsO}_4 \cdot 2\text{H}_2\text{O}$), angelellite ($\text{Fe}_4(\text{AsO}_4)_2\text{O}_3$) and kamarizaite ($\text{Fe}_3(\text{AsO}_4)_2(\text{OH})_3 \cdot 3\text{H}_2\text{O}$)	1333
OWEN P. MISSEN, STUART J. MILLS, JOHN SPRATT, MARK D. WELCH, WILLIAM D. BIRCH, MICHAEL S. RUMSEY and JAN VYLITA: The crystal-structure determination and redefinition of eztlite, $\text{Pb}_2^{2+}\text{Fe}_3^{3+}(\text{Te}^{4+}\text{O}_3)_3(\text{SO}_4)\text{O}_2\text{Cl}$	1355
IMA Commission on New Minerals, Nomenclature and Classification (CNMNC)	
U. HÄLENIUS, F. HATERT, M. PASERO and S. J. MILLS: New minerals and nomenclature modifications approved in 2018	1369
REFEREES	1381
BOOK REVIEWS	1383