

| Volume 59 | JANUARY 2021 | Part 1 |
|---|--|--------|
| Preface | F.C. HAWTHORNE & Y. UVAROVA | 3 |
| Thank You | E. SOKOLOVA | 7 |
| Structure topology and graphical representation of decorated and undecorated chains of edge-sharing octahedra | A.J. LUSSIER & F.C. HAWTHORNE | 9 |
| Raman and FTIR spectroscopy of synthetic amphiboles: I. The OH librational bands and the determination of the OH-F content of richterites <i>via</i> Raman spectroscopy | G. DELLA VENTURA, F.C. HAWTHORNE, B. MIHAILOVA, & A. SODO | 31 |
| Raman and FTIR spectroscopy of synthetic amphiboles: II. Divalent (Mg,Co) substitutions at the octahedrally coordinated sites | G. DELLA VENTURA, B. MIHAILOVA, & F.C. HAWTHORNE | 43 |
| Ferrofremovite, (NH ₄) ₂ Fe ²⁺ ₂ (SO ₄) ₃ , a new mineral from Solfatara di Pozzuoli, Campania, Italy | A.V. KASATKIN, J. PLÁŠIL, R. ŠKODA, I. CAMPOSTRINI, N.V. CHUKANOV, A.A. AGAKHANOV, V.YU. KARPENKO, & D.I. BELAKOVSKIY | 59 |
| The release of incidental nanoparticles during the weathering of gunshot residue in soils of a shooting range in Ontario, Canada | M. SCHINDLER, K. WEATHERHEAD, & H. MANTHA | 69 |
| Demagistrisite, the missing link in a polysomatic series from lawsonite to orientite | F. CÁMARA, A.R. KAMPF, F. NESTOLA, M.E. CIRIOTTI, D. SPARTÀ, & C. BALESTRA | 91 |
| Empirical electronic polarizabilities for use in refractive index measurements III. Structures with short ¹⁵ Ti–O and vanadyl bonds | R.D. SHANNON & R.X. FISCHER | 107 |
| Determination of the crystal structure and redefinition of tsugaruite, Pb ₂₈ As ₁₅ S ₅₀ Cl, the first lead-arsenic chloro-sulfosalt | C. BIAGIONI, L. BINDI, K. MOMMA, R. MIYAWAKI, Y. MATSUSHITA, & Y. MOELO | 125 |
| Chlorine-rich amphiboles from the Grenville-age Hudson Highlands of New York State | A.J. GILLAND, L.I. HEBERT, D.R. JAVIER-JIMENEZ, J.M. MASI, S.R. MEYLER, S.G. SCHWARTZ, E.A. VERHAEG, J.M. HUGHES, E.S. LINCOLN, G.P. O'BRIEN, S.K. POWERS, R.G. SCHIREMAN, M.V. LUPULESCU, & D.G. BAILEY | 139 |
| Cesiokenopyrochlore, the first natural niobate with an inverse pyrochlore structure | A.A. AGAKHANOV, A.V. KASATKIN, S.N. BRITVIN, O.I. SIDRA, L.A. PAUTOV, I.V. PEKOV, & V.YU. KARPENKO | 149 |

(cont'd overleaf)

Cover image: *The crystal structure of byzantievite*



(cont'd from back cover)

| | | |
|--|--|-----|
| Proof that a dominant endmember formula can always be written for a mineral or a crystal structure | F.C. HAWTHORNE | 159 |
| On the calculation of the relative amounts of endmember constituents for garnet | F.C. HAWTHORNE | 169 |
| Arrheniusite-(Ce), $\text{CaMg}[(\text{Ce}_7\text{Y}_3)\text{Ca}_5](\text{SiO}_4)_3(\text{Si}_3\text{B}_3\text{O}_{18})(\text{AsO}_4)(\text{BO}_3)\text{F}_{11}$, a new member of the vicinite group, from the Östanmossa mine, Norberg, Sweden | D. HOLTSTAM, L. BINDI, P. BONAZZI, H.-J. FÖRSTER, & U.B. ANDERSSON | 177 |
| Nomenclature and classification of the arctite supergroup. Aravaite, $\text{Ba}_2\text{Ca}_{18}(\text{SiO}_4)_6[(\text{PO}_4)_3(\text{CO}_3)]\text{F}_3\text{O}$, a new arctite supergroup mineral from Negev Desert, Israel | E. GALUSKIN, I. GALUSKINA, B. KRÜGER, H. KRÜGER, Y. VAPNIK, A. KRZĄTAŁA, D. ŚRODEK, & G. ZIELIŃSKI | 191 |
| A structure hierarchy for the aluminofluoride minerals | F.C. HAWTHORNE & S. HERWIG | 211 |
| Alluaudite-group phosphate and arsenate minerals | K.T. TAIT, F.C. HAWTHORNE, & N.M. HALDEN | 243 |
| The hexagonal \leftrightarrow orthorhombic structural phase transition in claringbullite, $\text{Cu}_4\text{FCl}(\text{OH})_6$ | M.D. WELCH, J. NAJORKA, M.S. RUMSEY, & J. SPRATT | 265 |
| Natural and anthropogenic analogues for high-level nuclear waste disposal repositories: A review | M. FAYEK & J. BROWN | 287 |