



Inside the Experimental Lab: Where fire and pressure force fearful rocks to confess

Tantalum and Niobium: Science, statistics and supply considerations

Cultivating an Eon Rose: A new hybrid variety seeks multidisciplinary input to flourish and flower

Editor/Rédacteur en chef

Andrew Kerr
 Department of Earth Sciences
 Memorial University
 St. John's, NL, A1B 3X5
 E-mail: akerr@mun.ca

Managing Editor/directrice de rédaction

Cindy Murphy
 E-mail: cmurphy@stfx.ca

Publications Director/Directrice de publications

Karen Dawe
 Geological Association of Canada
 St. John's NL Canada A1B 3X5
 Tel: (709) 864-2151
 E-mail: kfmdawe@mun.ca

Copy Editors/Rédacteurs copie

Stephen Amor, Lawson Dickson,
 Rob Raeside, Paul Robinson

Associate Editors/Rédacteurs associés

Sandy Cruden, Fran Haidl
 Jim Hibbard, John Hinchey
 Stephen Johnston, Fraser Keppie

Assistant Editors/Directeurs adjoints

Columnist: Paul F. Hoffman
 - The Tooth of Time
 Outreach: Pierre Verpaelt (Québec)
 Beth Halfkenny (Ontario)
 Godfrey Nowlan (Prairies)
 Eileen van der Flier-Keller (BC)
 Sarah Laxton (North)
 Professional Affairs for Geoscientists:
 Oliver Bonham
 Views from Industry: Elisabeth Kusters
 Series:
 Andrew Hynes Series: Tectonic Processes:
 Stephen Johnston, Brendan Murphy and
 Boswell Wing
 Canada GEESE (Geospatial Earth and
 Environmental Science Explorations):
 Declan G. De Paor
 Classic Rock Tours: Andrew Kerr
 Climate and Energy: Andrew Miall
 Economic Geology Models: David Lentz
 and Elizabeth Turner
 Geology and Wine
 Geoscience Medallist: Andrew Kerr
 Great Canadian Lagerstätten:
 David Rudkin and Graham Young
 Great Mining Camps of Canada:
 Stephen McCutcheon
 Heritage Stone:
 Dolores Pereira and Brian R. Pratt
 Igneous Rock Associations: Jaroslav Dostal
 Modern Analytical Facilities: Keith Dewing,
 Robert Linnen and Chris R.M. McFarlane
 Remote Predictive Mapping:
 Jeff Harris and Tim Webster

Illustrator/Illustrateur

Peter I. Russell, Waterloo ON

Translator/Traducteur

Jean Alfred Renaud, Magog QC

Typesetter/Typographe

Bev Strickland, St. John's NL

Publisher/Éditeur

Geological Association of Canada
 c/o Department of Earth Sciences
 Memorial University of Newfoundland
 St. John's NL Canada A1B 3X5
 Tel: (709) 864-7660
 Fax: (709) 864-2532
 gacpub@mun.ca
 gac@mun.ca
 www.gac.ca

© Copyright 2018

Geological Association of Canada/
 L'Association géologique du Canada
 Except Copyright Her Majesty the Queen
 in right of Canada 2017 where noted.
 All rights reserved/
 Tous droits réservés
 Print Edition: ISSN 0315-0941
 Online Edition: ISSN 1911-4850

Volume 45

A journal published quarterly by the Geological Association of Canada, incorporating the Proceedings.

Une revue trimestrielle publiée par l'Association géologique du Canada et qui en diffuse les actes.

Subscriptions: Receiving four issues of *Geoscience Canada* per year for \$50 is one of the benefits of being a GAC member. To obtain institutional subscriptions, please contact Érudit: www.erudit.org

Abonnement: Recevoir quatre numéros par année pour 50,00 \$ du magazine *Geoscience* est l'un des avantages réservés aux membres de l'AGC. Pour les abonnements institutionnels, s'il vous plaît contacter Érudit: www.erudit.org

Photocopying: The Geological Association of Canada grants permission to individual scientists to make photocopies of one or more items from this journal for non-commercial purposes advancing science or education, including classroom use. Other individuals wishing to copy items from this journal must obtain a copying licence from Access Copyright (Canadian Copyright Licensing Agency), 1 Yonge Street, Suite 1900, Toronto, Ontario M5E 1E5, phone (416) 868-1620. This permission does not extend to other kinds of copying such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Send permission requests to *Geoscience Canada*, at the Geological Association of Canada (address above).

La photocopie: L'Association géologique du Canada permet à tout scientifique, de reprographier une ou des parties du présent périodique, pour ses besoins, à condition que ce soit dans un but non-commercial, pour l'avancement de la science ou pour des buts éducatifs, y compris l'usage en classe. Toute autre personne désirant utiliser des reproductions du présent périodique doit préalablement obtenir une licence à cet effet d'Access Copyright (Canadian Copyright Licensing Agency), 1 Yonge Street, suite 1900, Toronto, Ontario M5E 1E5, Tél.: (416) 868-1620. L'autorisation susmentionnée exclut toute autre reproduction, telle la reproduction pour fins de distribution générale, de publicité ou de promotion, pour la création de nouveaux travaux collectifs ou pour la revente. Faites parvenir vos demandes d'autorisation à *Geoscience Canada*, au soin de l'Association géologique du Canada (voir l'adresse indiquée ci-dessus).

Those wishing to submit material for publication in *Geoscience Canada* should refer to the Instructions to Authors on the journal's website, www.geosciencecanada.ca

AUTHORS PLEASE NOTE:

Please use the web address <http://journals.hil.unb.ca/index.php/GC/index> for submissions; please do not submit articles directly to the editor.

The Mission of the Geological Association of Canada is to facilitate the scientific well-being and professional development of its members, the learned discussion of geoscience in Canada, and the advancement, dissemination and wise use of geosciences in public, professional and academic life. Articles in *Geoscience Canada* are freely available one year after their publication date, unless authors have arranged for immediate open access. Opinions expressed and interpretations presented are those of the authors and do not necessarily reflect those of the editors, publishers and other contributors. Your comments are welcome.

Cover Image: Artisanal mining is an important factor in the tantalum industry, and is especially widespread in Africa. The photo depicts ground-slucing of ore at the Nyabitare pegmatite in Rwanda, where weathered ore is largely concentrated by such methods (photo Richard Burt).

GEOSCIENCE CANADA

JOURNAL OF THE GEOLOGICAL ASSOCIATION OF CANADA
JOURNAL DE L'ASSOCIATION GÉOLOGIQUE DU CANADA

Series	67
Igneous Rock Associations 22. Experimental Petrology: Methods, Examples, and Applications <i>C.S.J. Shaw</i>	
Economic Geology Models 2.	85
Tantalum and Niobium: Deposits, Resources, Exploration Methods and Market – A Primer for Geoscientists <i>G.J. Simandl, R.O. Burt, D.L. Trueman, and S. Paradis</i>	
Report	97
EON-ROSE* and the Canadian Cordillera Array – Building Bridges to Span Earth System Science in Canada *Earth-System Observing Network - Réseau d'Observation du Système terrestre <i>K.J.E. Boggs, R.C. Aster, P. Audet, G. Brunet, R.M. Clowes, C.D. de Groot-Hedlin, E. Donovan, D.W. Eaton, J. Elliott, J.T. Freymueller, M.A.H. Hedlin, R.D. Hyndman, T.S. James, P.J. Kushner, K.D. Morell, C.D. Rowe, D.L. Schutt, M.G. Sideris, M. Ulmi, F.L. Vernon, and N. West</i>	