

# Geochemistry

EXPLORATION, ENVIRONMENT,  
ANALYSIS

The journal is abstracted and/or indexed in *AGI's Bibliography and Index of Geology, Chemical Abstracts, Current Contents, Engineering Index, GEOBASE, GeoRef, Mineralogical Abstracts, PASCAL/CNRS, GeoArchive, Thomson ISI database (SCIE, CCI/PC & ES)*

*Editor:* **G. E. M. Hall**, Geological Survey of Canada, Ottawa, Canada (e-mail: [GHall@NRCan.gc.ca](mailto:GHall@NRCan.gc.ca))

*Associate Editors:* **R. Bowell** (SRK Consulting, Cardiff, UK) **C. R. M. Butt** (CSIRO, Perth, Australia), **P. Freyssinet** (BRGM, Orleans, France), **C. Reimann** (The Geological Survey of Norway)

*Production Editor:* **Sally Oberst**, Geological Society Publishing House, Bath, UK (e-mail: [sally.oberst@geolsoc.org.uk](mailto:sally.oberst@geolsoc.org.uk))

## CONTENTS - Volume 7, No. 2

**Thematic set—From tropics to tundra: selected papers from 22nd International Geochemical Exploration Symposium, Perth, Western Australia, 19–23 September 2005**

### Guest Editors

C. R. M. Butt & C. R. Stanley

### Foreword

C. R. M. Butt & C. R. Stanley 98

**Application of litho geochemistry to gold exploration in the St Ives goldfield, Western Australia**

K. Prendergast 99

**Downhole litho geochemical patterns relating to chemostratigraphy and igneous fractionation processes in the Golden Mile dolerite, Western Australia**

T. O'Connor-Parsons & C. R. Stanley 109

**Application of sulphur isotopes to discriminate Cu–Zn VHMS mineralization from barren Fe sulphide mineralization in the greenschist to granulite facies Flin Flon – Snow Lake – Hargrave River region, Manitoba, Canada**

P. Polito, K. Kyser, D. Lawie, S. Cook & C. Oates 129

**Spectral reflectance: preliminary data on a new technique with potential for non-sulphide base metal exploration**

T. F. McConachy, K. Yang, M. Boni & N. J. Evans 139

**Wide-spaced sampling for delineation of geochemical provinces in desert terrains, northwestern China**

X. Wang, Q. Chi, H. Liu, L. Nie & B. Zhang 153

**Vertical variations and dispersion of elements in arid desert regolith: a case study from the Jinwozi gold deposit, northwestern China**

X. Wang, X. Wen, Y. Rong, Z. Liu, B. Sun, S. Zhao, S. Shi & H. Wei 163

**An evaluation of methods for imputation of missing trace element data in groundwaters**

B. L. Dickson & A. M. Giblin 173

**Soil and biogeochemical signatures of the Aripuanã base metal deposit, Mato Grosso, Brazil**

M. Cornelius, C. G. Porto, C. E. Dunn, C. R. M. Butt, C. Oates & R. Coelho 179

*Geochemistry: Exploration, Environment, Analysis* (ISSN 1467-7873) is published in February, May, August and November by the Geological Society Publishing House for the Geological Society, London and the Association of Applied Geochemists.

**Subscriptions** (volume 7, 2007): The subscription rate is £167 (UK), £167/\$321 (rest of Europe, USA & Canada) and £190/\$366 (rest of world) per volume, including postage and air-speeded delivery. Single issue price is £46 (UK), £46/\$88 (rest of Europe, USA & Canada) and £53/\$100 (rest of world). Trade subscriptions should be addressed to Journals Subscriptions Department, Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath BA1 3JN, UK (Tel: +44 (0) 1225 445046; Fax +44 (0)1225 442836).

Periodical postage paid at Middlesex, N.J. *Postmaster:* send address changes to *Geochemistry: Exploration, Environment, Analysis*. The Geological Society, c/o Pronto Mailers, PO Box 177, Middlesex, NJ 08846.

© 2007 The Geological Society of London and AAG. Except as otherwise permitted under the Copyright, Designs and Patents Acts, 1988, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency, 90 Tottenham Court Road, London W1P 9HE, UK. Enquiries concerning reproduction outside these terms should be sent to the Publishers at the Bath address. Users registered with the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970, USA: The item-fee code for this journal is 1467-7873/07/\$15.00.

The Geological Society and AAG make no representation, express or implied, with regard to the accuracy of the information contained in this publication and cannot accept any legal responsibility for any errors or omissions that may be made.

*Cover illustration:* Red Mountain emerging through morning fog, Bonnifield district, Alaska Range, about 100 km south of Fairbanks, Alaska. The dramatic colours are due to alteration and natural oxidation of sulphide minerals (dominantly pyrite) at this unmined Late Devonian volcanogenic massive sulphide deposit. Photograph by Robert G. Eppinger.