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Bernard Charlier  
Olivier Namur  
Rais Latypov  
Christian Tegner *Editors*

# Layered Intrusions

 Springer

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Bernard Charlier • Olivier Namur • Rais Latypov  
Christian Tegner  
Editors

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*Editors*

Bernard Charlier  
University of Liège  
Sart Tilman  
Belgium

Rais Latypov  
University of the Witwatersrand  
Johannesburg  
South Africa

Olivier Namur  
University of Hannover  
Hannover  
Germany

Christian Tegner  
Aarhus University  
Aarhus  
Denmark

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# Preface

Layered intrusions have received continuous interest since the publication of the treatise on ‘Layered Igneous Rocks’ by Lawrence Wager and Malcolm Brown, updated in books edited by Ian Parsons in 1987 and Grant Cawthorn in 1996. The study of these fossilized magma chambers keep inspiring a number of scientists with a range of interests including petrology and igneous differentiation, geochronology, geochemistry, mineralogy, rock textures and fabric, fluid dynamics, and ore deposits. The goal of this book is to further our understanding of magma chamber processes and crystal-liquid relationship during magma cooling magma. Physical and chemical processes are now better quantified thanks to the development analytical and computing tools such as compositional mapping, 3D X-ray computed tomography, in situ analyses for trace elements and isotopes, development of new experimental facilities, and progress in instrument sensitivity.

The book is subdivided into two parts. The first includes reviews and new views on chronological, textural, mineralogical, geochemical, and magnetic characteristics of layered igneous rocks. The second part reviews recent progress in the study of layered intrusions. A newcomer on the layered intrusions scene is the Panzhihua intrusion (SW China) that has been intensively studied recently. Reviews of recent findings for Sept Iles, Bushveld, Kiglapait, Ilímaussaq, and layered rocks in ophiolites are also presented. Interest in layered intrusions is also driven by their natural resources. Many intrusions host world-class ore bodies of chromium, platinum group elements (PGE), vanadium, titanium and phosphorous. Ore-forming processes and important deposits associated with layered intrusions are described and their origin is discussed.

The objective of this book is to outline the most recent ideas and challenges in the study of layered igneous bodies. It has also the purpose to aid in teaching, and to encourage new studies to tackle major issues in the understanding of magma chamber processes and associated ore-forming processes.

The book has benefited from detailed comments by a many reviewers, who are greatly acknowledged: Tom Andersen, Lewis Ashwal, Olivier Bolle, Alan Boudreau, Georges Ceeleneer, Kevin Chamberlain, Jean-Clair Duchesne, Bernard Henry, Michael Higgins, Clément Ganino, Lotte Melchior Larsen, Johan Lissenberg, Wolfgang Maier, Edmond Mathez, Iain McDonald, Jim Mungall, Richard Naslund, Troels Nielsen, Brian O’Driscoll, Ariel Provost, James Roberts, Brian Robins, Jill VanTongeren, Richard Wilson, and other anonymous referees.

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# Contributors

**B  n  dicte Abily** CNRS-UMR 5563, GET, OMP, University of Toulouse, Toulouse, France

**Jean H. B  dard** Geological Survey of Canada, Qu  bec, Canada

**Francois Blanchette** School of Natural Sciences, University of California Merced, Atwater, CA, USA

**Alan E. Boudreau** Division of Earth and Ocean Sciences, Nicholas School of the Environment and Earth Sciences, Duke University, Durham, NC, USA

**John W. M. Bush** Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA, USA

**R. Grant Cawthorn** School of Geosciences, University of the Witwatersrand, Johannesburg, South Africa

**Georges Ceuleneer** CNRS-UMR 5563, GET, OMP, University of Toulouse, Toulouse, France

**Bernard Charlier** Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA, USA; Department of Geology, University of Li  ge, Sart Tilman, Belgium

**Colin H. Donaldson** School of Geography and Geosciences, University of St. Andrews, St. Andrews, UK

**Jean-Clair Duchesne** Department of Geology, University of Liege, Sart Tilman, Belgium

**Eric C. Ferré** Department of Geology, Southern Illinois University at Carbondale, Carbondale, IL, USA

**Bélinda Godel** CSIRO Mineral Resources Flagship, Kensington, WA, Australia

**Michael D. Higgins** Sciences de la Terre, Université du Québec à Chicoutimi, Chicoutimi, Québec, Canada

**Marian B. Holness** Department of Earth Sciences, University of Cambridge, Cambridge, UK

**Rais Latypov** School of Geosciences, University of the Witwatersrand, Wits, South Africa

**Craig Magee** Department of Earth Science and Engineering, Imperial College, London, UK

**Gregor Markl** Mathematisch-Naturwissenschaftliche Fakultät, FB Geowissenschaften, Universität Tübingen, Tübingen, Germany

**Michael A. W. Marks** Mathematisch-Naturwissenschaftliche Fakultät, FB Geowissenschaften, Universität Tübingen, Tübingen, Germany

**D. Morata** Departamento de Geología & Andean Geothermal Center of Excellence (CEGA, Fondap-CONICYT), Facultad de Ciencias Físicas Matemáticas, Universidad de Chile, Santiago, Casilla, Chile

**Stearns A. Morse** Department of Geosciences, University of Massachusetts, Amherst, MA, USA

**James E. Mungall** Department of Earth Sciences, University of Toronto, Toronto, ON, Canada

**Olivier Namur** Institute of Mineralogy, University of Hannover, Hannover, Germany

**Troels F. D. Nielsen** Geological Survey of Denmark and Greenland, Copenhagen, Denmark

**Brian O'Driscoll** School of Physical and Geographical Sciences, Keele University, Keele, UK; The University of Manchester School of Earth, Atmospheric and Environmental Sciences (SEAES), Manchester, UK

**Kwan-Nang Pang** Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan, China; Department of Geosciences, National Taiwan University, Taipei, Taiwan, China

**Thomas Peacock** Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA

**James S. Scoates** Department of Earth, Ocean & Atmospheric Sciences, Pacific Centre for Isotopic and Geochemical Research, University of British Columbia, Vancouver, BC, Canada

**J. Gregory Shellnutt** Department of Earth Sciences, National Taiwan Normal University, Taipei, Taiwan, China

**Carl J. Spandler** School of Earth and Environmental Sciences, James Cook University, Townsville, QLD, Australia

**Carl T. E. Stevenson** School of Geography, Earth and Environmental Sciences, University of Birmingham, Birmingham, UK

**Atsushi Toramaru** Department of Earth and Planetary Sciences, Kyushu University, Fukuoka, Japan

**Jacqueline Vander Auwera** Department of Geology, University of Liege, Liege, Belgium

**Ilya V. Veksler** Department of Mineralogy and Petrology, Technical University Berlin, Berlin, Germany; Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Potsdam, Germany; Department of Geology, Perm State University, Perm, Russia

**Ron H. Vernon** Department of Earth and Planetary Sciences and National Key Centre for GEMOC, Macquarie University, Sydney, Australia

**Corey J. Wall** Department of Earth, Ocean & Atmospheric Sciences, Pacific Centre for Isotopic and Geochemical Research, University of British Columbia, Vancouver, BC, Canada

**Mei-Fu Zhou** Department of Earth Sciences, The University of Hong Kong, Hong Kong, China