

# 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.

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