
Introduction to Exploration Geochemistry

A. A. Levinson
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It is indeed high time for a new textbook on Exploration Geochemistry and the recent textbook by A. A. Levinson should be a welcome addition to any exploration library.

This book is a comprehensive review of recent papers in this field, (but contains no original data). The list of references is exhaustive and the vast majority are more recent than 1965 and at least half are post-1970 ensuring that the content is fully up-to-date. This textbook also contains a most welcome chapter on exploration geochemistry for oil and gas (by B. Hitchon) which serves as a good introduction to this complex subject, something which is lacking in mineral exploration literature up to this time.

The textbook is essentially in three sections, the first deals principally with the theory (Chapters 1 - 5) and the second with the practice (Chapters 7 - 10) of exploration geochemistry and the last three chapters (11 - 13) with geochemical exploration in Canada, statistics and oil and gas respectively. The author does not divide the book formally into three sections, but it would have been easier to use if he had, as the Table of Contents is somewhat unsatisfactory. Without reading the text it is difficult to tell what the difference is likely to be for example, between Chapter 2 "The Primary Environment" and Chapter 7 "Primary Dispersion (Selected Topics)". In fact, the former deals more with the theoretical aspects of exploration geochemistry, while the latter gives a number of actual examples. There are several examples of this type.

One problem faced by exploration geochemists is the fact that they

require a knowledge in a number of diverse fields such as pedology, geomorphology, rock weathering, etc., information on which is generally only available in more specialized texts. The first five chapters of this textbook are particularly good inasmuch as they provide an up-to-date summary and an excellent list of references on most of these inter-disciplinary aspects important to exploration geochemistry. These chapters provide the type of information, in a form readily understood by geologists, which is required for a good working knowledge of exploration geochemistry, but which generally have to be found in more specialized texts. For example, Chapter 3 contains a truly excellent summary of weathering, something which is long overdue in the geochemical literature. In addition, the author has obviously consulted numerous sources to compile summary tables such as one summarizing average abundances of 65 elements in six rock types, soil and river water. Tables such as these provide very useful references.

In the section concerning mineral exploration (Chapters 7 - 10) where individual case histories and examples are used, the author's lack of practical experience in exploration geochemistry is apparent from time to time. This does not appear as any major error or omission, but rather as minor inconsistencies, and ambiguities. The text is also possibly longer than it need be. For example, the introduction (pages 9 - 30) are largely redundant and could be shortened significantly. In addition, by treating topics twice, firstly from the theoretical and secondly from the practical aspects, there is the inevitable repetitiveness.

Notwithstanding these criticisms this textbook provides an excellent introduction to exploration geochemistry, particularly when it is kept in mind, as the author emphasizes in the Preface, that it is intended for students and geologists who are not expert in geochemistry, but wish to have a good working knowledge of this field. It is an extremely comprehensive and well-rounded review and as such could save any reader a great deal

of time, rather than trying to compile the same information himself from the original source.

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