

BOOK REVIEW

MAGNETIC METHODS FOR THE TREATMENT OF MINERALS

by

J. Svoboda, (Published by Elsevier, 1987).

Like the present review, this book, dealing with magnetic methods for the treatment of minerals, is a little late in arrival. That notwithstanding, it is a book well worth waiting for. It is not simply the best available modern comprehensive treatment of high gradient magnetic separation and its applications, it is the only truly comprehensive text on that subject matter.

Text on this subject have, of course, been written in recent years, (including one by this reviewer, generously referred to here by Svoboda). Clearly, such monographs serve some useful purpose, particularly in cataloging the more recent developments in a fast-changing field. However, when a monumental text such as this (692 pages) arrives on the shelves, the younger engineer, the graduate researcher, finally has a genuinely authoritative text he can turn to. This is the kind of book on magnetic separation we would all have liked to have written but simply did not have the energy and industry to write.

Svoboda has that energy and has distilled (most, if not all of) the best parts of around 500 published works in this area. Accordingly, the style of the book is a somewhat pedestrian and is not calculated to attract the casual reader or non-specialist.

The text comprises 6 chapters, the first of which contains a useful summary of the magnetic properties of many of the more important naturally-occurring minerals. Chapter 2 contains a detailed review of magnetic separation techniques based partly upon a familiar scheme of low-intensity wet, low-intensity dry, high intensity wet and dry, etc., together with two additional classifications, namely superconducting separators and laboratory separators.

Chapter 3 dealing with the theory of high gradient magnetic separation is very detailed and comprehensive but, perhaps, a little uninspired. Included in this chapter is a section on magnetic flocculation which seemed to this reviewer a little too brief, particularly in the light of Svaboda's own fine work in this subject area. Also included in Chapter 3 is Open Gradient Magnetic Separation, which, again, seems a little too sketchy.

Where the book really comes alive is in Chapter 4 in which practical aspects of magnetic separation are dealt with in considerable detail. Here, the book is written, with real authority, from the viewpoint of someone with substantial practical experience rather than from that of the desk-bound academic applied physicist.

Chapter 5 contains an excellent and detailed survey of industrial applications, with particular reference to minerals treatment. The chapter, however, also contains substantial information on other major applications, including waste water treatment and nuclear applications.

The final chapter of the book is one of the most interesting, dealing with the important but too often neglected issue of the economics of magnetic separation, with particular reference in this case to capital costs and running costs of some of the more widely used magnet systems.

In summary, this is an excellent textbook on magnetic separation, a book so comprehensive in form as to approximate closely to a handbook on the subject. In the preface the author talks of his attempt to bring together through this book, academic researches on the one hand and practicing mineral processing (field) engineers on the other. He comes pretty close to succeeding in this aim with his book. To write a text such as this requires effort, intelligence and dogged determination. Svoboda deserves all of the recognition this book will, undoubtedly bring him.