Mineral Matter and Ash in Coal

Edited by Karl S. Vorres

(American Chemical Society, 1986)

Mineral Matter and Ash in Coal is a significant contribution to coal science and technology literature. It is probably the only available comprehensive text dealing with mineral matter in coal.

The subject matter is covered in a logical sequence with high caliber articles by renowned authors in the field. The text starts with an overview by the editor summarizing and highlighting the present state of knowledge and research in the areas covered in subsequent parts of the text. The text is, then, divided into six parts covering (1) chemistry of coal mineral matter, (2) coal ash properties, (3) prediction of coal ash properties, (4) coal ash deposition in boilers, (5) ash and mineral matter catalysis of coal, and (6) coal beneficiation.

Each part starts with an introductory article giving an overview and discussion of developments in the field with the exception of Chapter 3, in which the second article is the introductory section. The reason for the change of the sequence is not very clear, but it may be because the first article introduces a novel technique for analysis of thermodynamic data. These introductory articles help readers to acquaint themselves with the latest state of the topic dealt with in subsequent articles.

Notwithstanding the major emphasis on addressing coal scientists and technologists interested in continuous and efficient operation of boilers, many sections of the text should also be of significant value to those investigating the handling and utilization of coal combustion waste or byproducts, in particular, fly ash. A considerable amount of research has been and is being done on this latter aspect of coal technology.

It would be very beneficial if a part of the book were devoted to utilization of coal combustion wastes. A broader coverage including waste utilization could have been unreasonable to expect from a single symposium; however, a future symposium covering this latter aspect would be highly desirable.

Reviewer: Turgut Demirel is professor-in-charge of Civil Engineering Materials and coordinator of the Engineering Research Institute Materials Analysis Research Laboratory, at Iowa State University.

Fractals in Physics

Edited by Luciano Pietronero

(Elsevier North-Holland, 1986)

Fractals in Physics is a compilation of papers presented at the International Trieste Symposium on Fractals in Physics held July 9-12, 1985 in Trieste, Italy. The papers have been organized roughly into nine sections by subject area, such as General Properties of Fractals, Irreversible Growth Models, and Kinetics of Clustering, to name only a few.

There is a tendency to have false hopes on hearing of a new title on fractal phenomena. We tend to expect, if we are optimists, a much needed introduction and treatise on "Fractals in Physics," or if we are pessimists, we say "Just *another* collection of papers that we'll have sitting on our shelf, collecting dust, that we'll be able to buy at the Barnes and Noble Annex for peanuts in a few years."

However, we realize this might be different! After all, it is 1987, and this is fractals *and* physics. Let's peruse the book. The editors have done an honest and sincere job of compiling and organizing the work. Is there anything new, perhaps controversial? Right up front, it is there—Mandelbrot's new work on self-affine fractals. Is there a section on diffusion limited aggregation? Absolutely! Sander and others presented well-written papers.

How about some new theoretical work involving scaling behavior and its tie-in with different physical behavior? Yes, it too is respectably presented by Rammal among others. But is it *art*, are there any beautiful pictures? After all, Mandelbrot has spoiled us all with his glorious artwork. No, there are no colorful pictures. Well, one can't have everything in a book such as this. After all, physics has an intrinsic beauty and overall harmony all its own so, in a sense, the "art" is indeed there.

What this book is *not*, is a much needed organized tutorial on fractals in physics. However, that does not preclude the usefulness of this book. Some of the leaders in the founding of fractal concepts in physical phenomena have written excellent papers for this conference. Thus, if you get this book expecting to brush up on the latest thoughts in several specific areas of fractal phenomena, you will not be disappointed.

If fractals are a revolutionary new way of thinking about Nature, then here is an excellent historical record of it; materials scientists should find this book to be an important reference in the future. Consideration of the book as a piece of creative work should be more sensibly directed toward the contributors, for it is *their* creative efforts that have been directed toward a new way of looking at Nature, that is the work of art.

Reviewers: D.E. Passoja is an adjunct professor at the Pennsylvania State University and a professional artist in New York City. J.J. Mecholsky is an associate professor of ceramic science at the Pennsylvania State University and a senior research associate at Applied Research Laboratories.

https://doi.org/10.1557/S088376940006797X Published online by Cambridge University Press