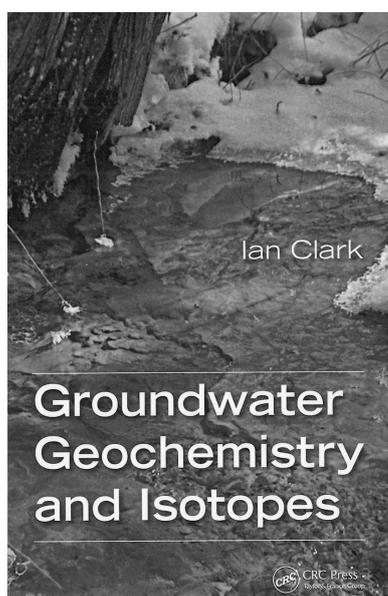


Groundwater Geochemistry and Isotopes, by I. Clark, 2015. CRC Press/Taylor & Francis Group, Boca Raton/London/New York. 438 pages. Hardcover: price GBP 82.00, ISBN 978-1-4665-9173-8.



During the past 50 years we have seen a marked proliferation of isotope studies and their application in hydrogeology. These methods allow to resolve many important problems, in particular those concerning the age and origin of groundwater. Our working knowledge of these analyses (that are being improved and refined) is contained in numerous articles and monographs, as well as some rather out-of-date manuals. Not only does “Groundwater Geochemistry and Isotopes” by Ian Clark, who for many years has been doing research on isotopes, contain a compendium of our current knowledge of isotopes and their application in hydrogeology, it also presents a thorough picture of geochemistry (hydrogeochemistry). By selecting this structure of the manual, the author has done justice to the fact that knowledge of isotopes is complementary to geochemistry and allows us to understand issues related to the origin and age of groundwater, as well as its hydrodynamical and hydrochemical transformations. The book is divided into 10 chapters. In the first three the author presents basic geochemical

data on water and the interaction between water and rocks, as well as the thermodynamics of aqueous solutions and geochemical reactions. It should be noted that the author offers highly accessible explanations here of a range of important concepts in the field of water chemistry.

The next two chapters are devoted to reactions on stable isotopes and radioisotopes and their behaviour in the hydrological cycle. Two further sections (chapters 6 and 7) focus on weathering processes and the role of CO₂ in these (which is particularly important for understanding the behaviour of carbon isotopes), as well as the evolution of groundwater composition as a result of the influence of processes such as sorption, ion exchange or redox reactions.

Chapter 8 is devoted to determination of the age and origin of groundwater using different stable isotopes and radioisotopes and global atmospheric pollutants (CFCs, SF₆, 85Kr). The extended chapter 9 comprises an overview of isotopes and geochemistry in anthropogenically polluted environments.

The substantive content of the book encompasses very important, practical information on sampling for isotopic and geochemical research and on analytical methods. Added are a very large number of references (over 300) and an index of terms related to isotope geochemistry.

Language use is relatively simple and accessible. Included in each chapter, in addition to theoretical knowledge, are examples of calculations and interpretation of research results, as well as sets of tasks and questions. This approach facilitates its use as a manual and makes it especially useful for students. The book is a compendium of current knowledge of isotopes and geochemistry, and I can recommend it to all students and researchers who are interested in isotopes and aqueous geochemistry.

Józef Górski
Adam Mickiewicz University, Poznań, Poland
gorski@amu.edu.pl