DESCRIPTION

This book provides a comprehensive introduction to radiogenic and stable isotope geochemistry. Beginning with a brief overview of nuclear physics and nuclear origins, it then reviews radioactive decay schemes and their use in geochronology. A following chapter covers the closely related techniques such as fission-track and carbon-14 dating. Subsequent chapters cover nucleosynthetic anomalies in meteorites and early solar system chronology and the use of radiogenic isotopes in understanding the evolution of the Earth’s mantle, crust, and oceans. Attention then turns to stable isotopes and after reviewing the basic principles involved, the book explores their use in topics as diverse as mantle evolution, archeology and paleontology, ore formation, and, particularly, paleoclimatology. A following chapter explores recent developments including unconventional stable isotopes, mass-independent fractionation, and isotopic ‘clumping’. The final chapter reviews the isotopic variation in the noble gases, which result from both radioactive decay and chemical fractionations.

ABOUT THE AUTHOR

William White teaches geochemistry as a Professor of earth and atmospheric sciences at Cornell University. He received a B.A. in geology from the University of California, Berkeley and a PhD in oceanography from the University of Rhode Island. He is a Fellow of the Geochemical Society/European Association of Geochemistry and the AGU and has been named a highly cited author by ISI. He is the author of Geochemistry, also published by Wiley-Blackwell.
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