

1. Record Nr.	UNINA9910830010603321
Titolo	Geochemistry : concepts and applications / / edited by Inamuddin [and three others]
Pubbl/distr/stampa	Hoboken, New Jersey ; ; Beverly, Massachusetts : , : Wiley : , : Scrivener Publishing, , [2021] ©2021
ISBN	1-119-71012-X 1-119-71008-1
Descrizione fisica	1 online resource (208 pages)
Disciplina	551.9
Soggetti	Geochemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Cover -- Half-Title Page -- Series Page -- Title Page -- Copyright Page -- Contents -- Preface -- 1 Toxic Geogenic Contaminants in Serpentinitic Geological Systems: Occurrence, Behavior, Exposure Pathways, and Human Health Risks -- 1.1 Introduction -- 1.2 Serpentinitic Geological Systems -- 1.2.1 Nature, Occurrence, and Geochemistry -- 1.2.2 Occurrence and Behavior of Toxic Contaminants -- 1.3 Human Exposure Pathways -- 1.3.1 Occupational Exposure -- 1.3.2 Non-Occupational Exposure Routes -- 1.4 Human Health Risks and Their Mitigation -- 1.4.1 Health Risks -- 1.4.2 Mitigating Human Exposure and Health Risks -- 1.5 Future Perspectives -- 1.6 Conclusions -- Acknowledgements -- References -- 2 Benefits of Geochemistry and Its Impact on Human Health -- 2.1 Introduction -- 2.2 General Overview of Geochemistry and Human Health -- 2.2.1 Types of Geochemistry -- 2.2.2 Some Beneficial Effect of Some Mineral With Health Benefits -- 2.2.3 Application of Geochemistry on Human Health -- 2.3 Conclusion and Recommendations -- References -- 3 Applications of Geochemistry in Livestock: Health and Nutritional Perspective -- 3.1 Introduction -- 3.2 General and Global Perspective About Geochemistry in Livestock -- 3.3 Types of Geochemistry and Their Numerous Benefits -- 3.3.1 Analytical Geochemistry -- 3.3.2 Isotope Geochemistry -- 3.3.3 Low Temperature Geochemistry -- 3.3.4

Organic and Petroleum Geochemistry -- 3.4 Application of Geochemistry in Livestock -- 3.5 Geochemistry and Animal Health -- 3.6 General Overview of Geochemistry in Livestock's Merits of Geochemistry/Essential Minerals in Livestocks -- 3.6.1 Specific Examples of Authors That Have Used Essential Minerals in Livestock -- 3.6.2 Livestock in Relation to Geominerals -- 3.6.3 Trace Minerals Parallel Importance in Livestock -- 3.6.4 Heavy Metals Impact Livestock -- 3.7 Conclusion and Recommendations.

References -- 4 Application in Geochemistry Toward the Achievement of a Sustainable Agricultural Science -- 4.1 Introduction -- 4.2 General Overview on the Utilization of Geochemistry and Their Wide Application on Agriculture -- 4.2.1 Classification -- 4.2.2 Chemical Composition of Rocks -- 4.2.3 Effect of Some Beneficial Minerals in Agriculture -- 4.2.4 Beneficial Mineral Nutrients That are Crucial to the Development of Plants -- 4.3 Role of Geochemistry in Agriculture -- 4.4 Geochemical Effects of Heavy Metals on Crops Health -- 4.5 Conclusion and Recommendations -- References -- 5 Geochemistry, Extent of Pollution, and Ecological Impact of Heavy Metal Pollutants in Soil -- 5.1 Introduction -- 5.2 Material and Methods -- 5.2.1 Review Process -- 5.2.2 Ecological Risk Index -- 5.3 Toxic Heavy Metal and Their Impact to the Ecosystems -- 5.3.1 Arsenic -- 5.3.2 Cadmium -- 5.3.3 Chromium -- 5.3.4 Copper -- 5.3.5 Lead -- 5.3.6 Nickel -- 5.3.7 Zinc -- 5.4 Metal Pollution in Soil Across the Globe -- 5.5 Ecological and Human Health Risk Impacts of Heavy Metals -- 5.6 Conclusion -- References -- 6 Isotope Geochemistry -- 6.1 Introduction -- 6.2 Basic Definitions -- 6.2.1 The Notation -- 6.2.2 The Fractionation Factor -- 6.2.3 Isotope Fractionation -- 6.2.4 Mass Dependent and Independent Fractionations -- 6.3 Application of Traditional Isotopes in Geochemistry -- 6.3.1 Geothermometer -- 6.3.2 Isotopes in Biological System -- 6.3.3 Isotopes in Archaeology -- 6.3.4 Isotopes in Fossils and the Earliest Life -- 6.3.5 Isotopes in Hydrothermal and Ore Deposits -- 6.4 Non-Traditional Isotopes in Geochemistry -- 6.4.1 Application in Tracing of Source -- 6.4.2 Application in Process Tracing -- 6.4.3 Biological Cycling -- 6.5 Conclusion -- References -- 7 Environmental Geochemistry -- 7.1 Introduction -- 7.2 Overview of the Environmental Geochemistry -- 7.3 Conclusions.

7.4 Abbreviations -- Acknowledgment -- References -- 8 Medical Geochemistry -- 8.1 Introduction -- 8.2 The Evolution of Geochemistry -- 8.3 This Science has Expanded Considerably to Become Distinct Branches -- 8.3.1 Cosmochemistry -- 8.3.2 The Economic Importance of Geochemistry -- 8.3.3 Analytical Geochemistry -- 8.3.4 Geochemistry of Radioisotopes -- 8.3.5 Medical Geochemistry and Human Health -- 8.3.6 Environmental Health and Safety -- 8.4 Conclusion -- References -- 9 Inorganic Geochemistry -- 9.1 Introduction -- 9.2 Elements and the Earth -- 9.2.1 Iron -- 9.2.2 Oxygen -- 9.2.3 Silicon -- 9.2.4 Magnesium -- 9.3 Geological Minerals -- 9.3.1 Quartz -- 9.3.2 Feldspar -- 9.3.3 Amphibole -- 9.3.4 Pyroxene -- 9.3.5 Olivine -- 9.3.6 Clay Minerals -- 9.3.7 Kaolinite -- 9.3.8 Bentonite, Montmorillonite, Vermiculite, and Biotite -- 9.4 Characterization Techniques -- 9.4.1 Powder X-Ray Diffraction -- 9.4.2 X-Ray Fluorescence Spectra -- 9.4.3 X-Ray Photoelectron Spectra -- 9.4.4 Electron Probe Micro-Analysis -- 9.4.5 Inductively Coupled Plasma Spectrometry -- 9.4.6 Fourier Transform Infrared Spectroscopy -- 9.4.7 Scanning Electron Microscopy Analysis -- 9.4.8 Energy Dispersive X-Ray Analysis -- 9.5 Conclusion -- References -- 10 Introduction and Scope of Geochemistry -- 10.1 Introduction -- 10.1.1 Periodic Table and Electronic Configuration -- 10.2 Periodic Properties -- 10.2.1 Ionization Enthalpy -- 10.2.2 Electron Affinity -- 10.2.3

Electro-Negativity -- 10.3 Chemical Bonding -- 10.3.1 Ionic Bond --
10.3.2 Covalent Bond -- 10.3.3 Metallic Bond -- 10.3.4 Hydrogen Bond
-- 10.3.5 Van der Waals Forces -- 10.4 Geochemical Classification and
Distribution of Elements -- 10.4.1 Lithophiles -- 10.4.2 Siderophiles
-- 10.4.3 Chalcophiles -- 10.4.4 Atmophiles -- 10.4.5 Biophiles --
10.5 Chemical Composition of the Earth -- 10.6 Classification of
Earth's Layers.
10.6.1 Based on Chemical Composition -- 10.6.2 Based on Physical
Properties -- 10.7 Spheres of the Earth -- 10.7.1
Geosphere/Lithosphere -- 10.7.2 Hydrosphere -- 10.7.3 Biosphere --
10.7.4 Atmosphere -- 10.7.5 Troposphere -- 10.7.6 Stratosphere --
10.7.7 Mesosphere -- 10.7.8 Thermosphere and Ionosphere -- 10.7.9
Exosphere -- 10.8 Sub-Disciplines of Geochemistry -- 10.9 Scope of
Geochemistry -- 10.10 Conclusion -- References -- Index -- EULA.

Sommario/riassunto

"Geochemistry is a branch of earth science. It is considered as a field of study that uses tools and principles of chemistry to explain the mechanisms in geologic environments. It often focuses on determining processes that control the abundance composition of minerals and their distribution in the earth crust. It plays a vital role in environmental soil and water systems to empathize, and modulates environmental problems, and studies the composition, structure and processes of the earth. This book aims to explore basic principles, concepts and applications of geochemistry. Topics include chemical weathering, impacts on living beings and water, geochemical cycles, oxidation and redox reactions in geochemistry, isotopes, analytical techniques, medicinal, inorganic, marine, atmospheric, and environmental applications, as well as case studies. This book helps in understanding the chemical composition of the earth and its applications. It also includes beneficial effects, bottlenecks, solutions, and future."--
