

Geochemical And Mineralogical Characterisation Of Vaalputs

New geochemical and mineralogical data from research conducted under the IAEA coordinated research project entitled Geochemical and Mineralogical Characterization of Uranium and Thorium Deposits has resulted in a better understanding of the genesis of uranium and thorium mineralization. This publication presents a summary of the research and selected papers from the project's partners. The results are expected to enhance exploration programmes, resource evaluation and sustainable supply of uranium and thorium for peaceful purposes. This edited volume is based on the best papers accepted for presentation during the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1), Tunisia 2018. The book is of interest to all researchers in the fields of Mineralogy, Geochemistry, Petrology and Volcanology. The Earth's interior is a source of heat, which makes our planet unique. This source regulates the formation and evolution of rocks at larger scales, and of minerals and sediments toward smaller scales. In such context, the exploration of georesources (products) has to be related to petrogenesis (processes). This volume offers an overview of the state-of-the-art petrogenesis and exploration in, but not limited to, the Middle East and Mediterranean regions. It gives new insights into processes and products related to the Earth's interior, and associated georesources by international researchers. Main topics include: 1. Petrogenetic processes: geochemistry, geochronology and geophysical approaches 2. Surficial processes: sedimentation and facies analysis 3. Applied mineralogy and tectonics 4. Geological research applied to mineral deposits

Environmental Geochemistry: Site Characterization, Data Analysis and Case Histories, Second Edition, reviews the role of geochemistry in the environment and details state-of-the-art applications of these principles in the field, specifically in pollution and remediation situations. Chapters cover both philosophy and procedures, as well as applications, in an array of issues in environmental geochemistry including health problems related to environment pollution, waste disposal and data base management. This updated edition also includes illustrations of specific case histories of site characterization and remediation of brownfield sites. Covers numerous global case studies allowing readers to see principles in action Explores the environmental impacts on soils, water and air in terms of both inorganic and organic geochemistry Written by a well-respected author team, with over 100 years of experience combined Includes updated content on: urban geochemical mapping, chemical speciation, characterizing a brownfield site and the relationship between heavy metal distributions and cancer mortality Volume 64 of Reviews in Mineralogy and Geochemistry presents examples that include the effects of inhaled dust particles in the lung (Huang et al. 2006; Schoonen et al. 2006), biomineralization of bones and teeth (Glimcher et al. 2006), the formation of kidney-stones, the calcification of arteries, the speciation exposure pathways and pathological effects of heavy metal contaminants (Reeder et al. 2006; Plumlee et al. 2006), the transport and fate of prions and pathological viruses in the environment (Schramm et al. 2006), the possible environmental-genetic link in the occurrence of neurodegenerative diseases (Perl and Moalem 2006), the design of biocompatible, bioactive ceramics for use as orthopaedic and dental implants and related tissue engineering applications (Cerruti and Sahai 2006) and the use of oxide-encapsulated living cells for the development of biosensors (Livage and Coradin 2006).

This book represents an important new contribution to the literature that presents practical and comprehensive solutions to mining activities. Its timely content has been prepared by several experts from around the world and its practical format addresses the major environmental predictive techniques required for the extraction and processing of metal resources.

Packed with reviews and case studies, it covers current methods used to forecast environmental effects of metal mining. Topics covered: Geochemical record of terrestrial environmental change, and global geochemical cycles; Chemical weathering and climate, river catchment studies; Environmental geochemistry of the terrestrial environment and its effect on health; Organic geochemistry; Marine and sedimentary geochemistry; Mineralogy, microbes and chemistry of weathering; Geochemical thermodynamics and kinetics; Geochemistry of crustal fluids and of catastrophic events. In recent decades, remote sensing technology has been incorporated in numerous mineral exploration projects in metallogenic provinces around the world. Multispectral and hyperspectral sensors play a significant role in affording unique data for mineral exploration and environmental hazard monitoring. This book covers the advances of remote sensing data processing algorithms in mineral exploration, and the technology can be used in monitoring and decision-making in relation to environmental mining hazard. This book presents state-of-the-art approaches on recent remote sensing and GIS-based mineral prospectivity modeling, offering excellent information to professional earth scientists, researchers, mineral exploration communities and mining companies.

Gems have been used in the manufacture of jewellery and as ornaments since antiquity. Considering gems, recent statistics have shown that about 15 billion Euros are annually at stake. Nowadays, gemmology, i.e., the study of gem materials, is one of the most expanding fields in the earth sciences, positioned between academia and industry. As an applied science, in gemmology, the instruments used should be non- or microdestructive, and their cost should be reasonable both in terms of equipment and time consumption. Gemmology can also be used contribute to the development of pure science and in some cases, destructive techniques may have to be used. Taking into account the fact that gems are albeit rarely available for scientific research, this compilation of 20 articles by around 100 researchers from over 30 different institutions situated in 20 countries from around the globe, presented in the Special Issue entitled "Mineralogy and Geochemistry of Gems", offers very good examples on the application of various methods for their study which will hopefully contribute to our better understanding of gem formation in general and will enhance scientific debates attracting more scientists from various disciplines to get involved in this field.

Economically viable concentrations of mineral resources are uncommon in Earth's crust. Most ore deposits that were mined in the past or are currently being extracted were found at or near Earth's surface, often serendipitously. To meet the future demand for mineral resources, exploration success hinges on identifying targets at depth. Achieving this requires accurate and informed models of the Earth's crust that are consistent with all available geological, geochemical and geophysical information, paired with an understanding of how ore-forming systems relate to Earth's evolving structure. Contributions to this volume address the future resources challenge by (i) applying advanced microscale geochemical detection and characterization methods, (ii) introducing more rigorous 3D Earth models, (iii) exploring critical behaviour and coupled processes, (iv) evaluating the role of geodynamic and tectonic setting and (v) applying 3D structural models to characterize specific

ore-forming systems.

The study of the geochemistry and mineralogy of different size fractions is essential to understanding mobility and availability of minerals to dissolution and oxidation during the weathering processes that takes place in mine rock pile materials. The oxidation results in acidic, iron- and sulfate-rich waters, which accelerate the oxidation of rock-forming minerals. This book, therefore, provides insight on: 1) how the amount and the extent of oxidation of the sulfide minerals vary from rock piles to rock piles all around the world due to different mineralogies and geochemical properties and 2) characterization of the geochemical and mineralogical properties of bulk rock pile samples and their different grain size fractions. At the end of reading this book you will come to understand how acid mine drainage could be tackled from a single understanding of the mineralogy and geochemistry of particle size fractions of mine rock pile materials.

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 directions in geochemistry.

Geochemical and Mineralogical Characterization of the Abandoned Valzinco (lead-zinc) and Mitchell (gold) Mine Sites Prior to Reclamation, Spotsylvania County, Virginia
Geochemical and Mineralogical Characterization of Surficial Residuum Formed from Lower Knox Group Dolostone, West Chestnut Ridge, Oak Ridge, Tennessee
Geochemical and Mineralogical Characterization of Uranium and Thorium Deposits
Geochemical and Mineralogical Characterization of the Arbuckle Aquifer
Studying Mineral Reactions and Its Implications for CO₂ Sequestration

In response to increasing concerns over release of anthropogenic greenhouse gases the Arbuckle saline aquifer in south-central Kansas has been proposed as a potential site for geologic storage for CO₂. Two wells (KGS 1-32 and 1-28) have been drilled to provide data for site specific determination of the storage potential of the Arbuckle. Cores from specific depths within Arbuckle (4164`-5130`) were utilized for study and flow-through experiments. Examination of formation rocks by thin section studies, SEM, XRD and CT scans was carried out to characterize the mineralogy of the core. Dominant mineralogy throughout the formation is dolomite with large chert nodules and occasional zones with pyrite and argillaceous minerals. Carbonate-silica contacts contain extensive heterogeneity with sulfide minerals and argillaceous material in between. Extensive vugs and microfractures are common. This study focuses on three zones of interest: the Mississippian pay zone (3670`-3700`), a potential baffle in Arbuckle (4400`-4550`) and the proposed CO₂ injection zone (4900`-5050`). Drill stem tests and swabbed brine samples collected from 13 depths throughout the aquifer reveal a saline brine (~50,000-190,000 TDS) dominated by Na, Ca²⁺ and Cl⁻. Elemental ratios of major cations with Cl⁻ demonstrate a typical saline aquifer system. Cl⁻/Br ratios reveal mixing between primary and secondary brines within the aquifer. Ca/Cl and Mg/Cl ratios suggest effect of dolomitization within the brines. [delta]¹⁸O and [delta]²H isotopes and Li/Cl ratios in the brine suggest the separation of upper and lower Arbuckle by a baffle zone. Swabbed waters provide Fe speciation data and reveal the importance of it in the system. Laboratory experiments carried out at 40°C and 2100 psi using formation core plug and collected brine identify reaction pathways to be anticipated when supercritical CO₂ is injected. Results showed fluctuating chemistries of elements with Ca²⁺, Mg²⁺, Na⁺ and Cl⁻ increasing during the first 15 hours, while Fe, S, and SO₄²⁻ decrease. For the next 15 hours a reverse trend of the same elements were observed. Alkalinity and pH show inverse relationship throughout the experiment. We conclude that dominant reactions will occur between brine, CO₂ and dolomite, calcite, chert, pyrite and argillaceous minerals. There is no

perceived threat to freshwater resources in Kansas due to CO₂ injection.

Mars is thought to have shared many similarities with the Earth during its history, leading to extensive research into the potential for life to arise on Mars. Here, a thorough mineralogical and geochemical characterization of primary and secondary phases in Martian meteorites Los Angeles, Zagami, and Nakhla was performed. This novel approach assesses their potential to host life and build on previous studies that focused on either astrobiological or geological factors. These meteorites were found to contain abundant iron-rich phases that can act as microbial substrates. Investigation of alteration phases in Nakhla allowed for the identification of a new secondary alteration assemblage and allowed for a reevaluation of aqueous environmental conditions. The subsurface horizons from which these meteorites are sourced represent potentially habitable substrates for microbial colonization, if aqueous environmental conditions were present. The methodologies developed here can be used to guide future Martian exploration and Mars sample return missions.

Issues in Land and Water Engineering / 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Coastal Engineering. The editors have built Issues in Land and Water Engineering: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Coastal Engineering in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Land and Water Engineering: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Cassiterite, wolframite, trace elements, LA-ICP-MS. - Kassiterit, Wolframit, Spurenelemente

North Pakistan represents a highly favourable area for a variety of mineral deposit types, including arc-related porphyry Cu, Au and Mo and arc and back arc epithermal precious metal deposits (Sweatman et al., 1995; PMDC, 2001). However, few deposits have been discovered in the area, mainly due to its remote nature and inaccessibility, and because of a lack of exploration tools for high altitude terrains. From stream sediment sampling campaigns by local and international organizations, including a large dataset provided by the Pakistan Mineral Development Corporation (PMDC), a significant amount of geochemical data now exists for the region. This data has been incorporated into an Arc-GIS9.2 database, along with stream catchment and geological information, and detail of all known areas of mineralisation. From this, spatial catchment maps together with multi-element geochemical associations have been studied to delineate areas showing anomalous values for Au and base metals. The two most prospective areas were found to be the Shyok Suture Zone and northern Kohistan, with the dominant control on mineralisation being structural rather than lithological. These areas were targeted for detailed stream sediment sampling and mineralogical and geochemical analysis. From studies of Au and Au pathfinder elements in different size fractions of the stream sediments and heavy mineral concentrates (HMC), the catchments of Teru, Asheriat and Pakora (in order of decreasing rank) were identified as most prospective. Morphological and geochemical analyses of native Au grains from panned concentrates has given an indication of proximity to bedrock source (

[Copyright: a528159481fff689a426d4d766ca7555](http://www.ScholarlyEditions.com/)