Ph Of Calcium Carbonate Solution

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Monitoring, Restoration, and Control, Second Edition Springer Science & Business Media
This booklet presents learning material based on the manufacture and uses of sodium carbonate made by the Solvay process. The photocopiable worksheets are suitable for pre- and post-16 students. Their aim is to encourage the students to apply chemical principles in an unfamiliar context. Teachers' notes are also included.
Mitigation and Cleaning Techniques Springer Science & Business Media
Workers in the field of corrosion and their students are most fortunate that a happy set of circumstances brought Dr. Marcel Pourbaix into their field in 1949. First, he was invited, while in the USA, to demonstrate at a two week visit to the National Bureau of Standards the usefulness of his electro chemical concepts to the study of corrosion. Secondly, also around the same time, Prof. H. H. Uhlig made a speech before the United Nations which pointed out the tremendous economic consequences of corrosion. Because of these circumstances, Dr. Pourbaix has reminisced, he chose to devote most of his efforts to corrosion rather than to electrolysis, batteries, geology, or any of the other fields where, one might add, they were equally valuable. This decision resulted in his establishing CEBELCOR (Centre BeIge d'Etude de la Corrosion) and in his development of a course at the Free University of Brussels entitled "Lectures on Electrochemical Corrosion." This book is the collection of these lectures translated into English.
American Society of Composites, Fourteenth International Conference Proceedings Society of Photo Optical
This is the first ever comprehensive treatment of NEXAFS spectroscopy. It is suitable for novice researchers as an introduction to the field, while experts will welcome the detailed description of state-of-the-art instrumentation and analysis techniques, along with the latest experimental and theoretical results.
Ocean Acidification Pergamon
In the last decade, numerous studies have demonstrated the existence of alternative pathways to nucleation and crystallisation that oppose the classical view. Such proposed scenarios include multistage reactions proceeding via various precursor species and/or intermediate phases. The aim of this book is to review and discuss these recent advances in our understanding of the early stages of mineralisation through a series of contributions that address both experimental and theoretical studies about the formation and nature of initial precursor species (e.g., prenucleation clusters, dense liquid phases, amorphous nanoparticles, etc.) as well as their transformations leading to the stable mineral phase. Several chapters are devoted to cutting-edge analytical techniques used for investigating the above processes in situ, in real time and at conditions relevant to both natural and industrial processes. At the end of the book, the editors summarize the key questions that still need to be addressed in order to establish a complete picture of the nucleation and growth processes involved during the formation of minerals
Determination of Soil Acidity by Treatment with Calcium Carbonate and Measurement of Carbon Dioxide Evolved John Wiley & Sons
Dietary calcium has been classified as one of the minerals frequently limiting in the American diet (FAO, 1962) . Bone demineralization has been observed as a result of calcium deficient diets (Salomon et al., 1972), partial gastrectomies (Eddy, 1971) and inadequate hormonal balance (Albright et al., 1948). Although bone demineralization, or osteoporosis, has been attributed to many factors, the interrelationship of gastric acidity and the utilization of dietary calcium may be a key to the etiology of osteoporosis. Eighty weanling male albino rats were divided into eight groups. All animals had their stomachs exposed through a mid-line incision. Control rats were sham-operated while the treatment animals had their stomachs X-irradiated to destroy the secretory cells. Four diets were prepared containing calcium carbonate, calcium chloride, tri-calcium phosphate or calcium gluconate as calcium sources. For a three-week experimental period, ten control and ten X-irradiated rats were fed each diet. In vitro data suggests that the solubility of each calcium salt, except calcium gluconate, increased in an acid media. Saturated viii ix solutions of calcium carbonate and tri-calcium phosphate had low quantities of calcium ion in solution in neutral pH's, but as the acidity was changed from pH 4 to pH 3 the calcium ion concentration increased as much as eight times. This demonstrates that the presence of acid with insoluble forms of calcium salts will generally increase calcium ion concentration in solution. All X-irradiated animals had an average fasting gastric pH of over 6, while the control rats averaged pH 2.5. The calcium absorption data demonstrates that X-irradiated rats fed diets containing soluble calcium salts (calcium chloride, 18.5 percent and calcium gluconate, 25.13 percent) had increased absorption values over those fed diets containing calcium salts of low solubility (calcium carbonate, 12.94 percent and tri-calcium phosphate, -7.06 percent). Femur strength and bone calcium data reflected similar evidence. Both femur strength and bone calcium of the X-irradiated rats fed the less soluble forms of calcium salt were significantly lower than the controls, while X-irradiated rats fed the more soluble forms of calcium had femur strength and bone calcium similar to the controls. Achlorhydric, or X-irradiated, animals were observed to have decreased iron stores in comparison with the control rats. Hemoglobin levels, liver iron and iron absorption were all significantly reduced in the x-irradiated animals. From the results of these experiments, it is apparent that gastric acidity and the solubility of the dietary calcium source play an important role in the utilization of calcium.
Kinetics of Carbonate-seawater Interactions ScholarlyEditions
The 13th Conference of the European Colloid and Interface Society (ECIS 99) was held in September 1999 in Dublin, Ireland. It brought together scientists from academic research and industry within the field of physics and chemistry of colloids and interfaces. The Conference focused on the following topics: - Surfactant colloids; - Polymer colloids and solid particles; - Food colloids; - Soft matter interfaces; - Biosystems; - Rheology; - Experimental methods in colloid and interface science.
A Primer for Earth System Scientists Springer Science & Business Media
This report documents two approaches for calculating chemical feed (i.e. lime and carbon dioxide) to produce a stable water to be distributed in a drinking water system. The procedures include: (a) a graphical solution embodied in nomograms contained in Appendix A of this report, and (b) a computerized procedure, written in BASIC, which can be immediately implemented on an IBM Personal Computer or Apple II and can be used on other systems with only minor modifications.
Ionic Equilibrium CRC Press
Clogging of pipes and tubes occurs when initially separated ionic components form a solid precipitate when mixed with each other. Such a phenomenon is particularly important in micro-devices where calcium carbonate (produced from the reaction between carbonate and calcium ions) causes clogging of the micro-pores or microcapillaries in such devices. Therefore, mathematical modeling of this physico-chemical process will shed light on the mechanism of the formation of calcium carbonate in small geometries and will help in designing physical methods which will prevent clogging such as the application of an electric field across the capillaries. The resulting equations describing the aforementioned system consist of a system of nonlinear reaction-diffusion equations which needs to be solved numerically in two spatial dimensions. The finite volume method is suitable to solve these equations in complicated geometries and also in the presence of an electric field. The numerical solutions will then be compared to the experimental data on calcium carbonate clogging obtained by Rabih Makki in his thesis. The system we model consists of two reservoirs and one connecting capillary. The reservoirs contain electrolytes of a particular composition: a solution of calcium chloride and a solution of sodium carbonate, respectively. As the calcium and carbonate ions diffuse calcium carbonate is formed in the capillary. The dissociation reactions of the carbonic acid, bicarbonate and water can also occur therein. The precipitate deposition pulse is studied, while the concentration of either ion in the left or right reservoirs is being varied. Locations where the concentration product of the calcium and carbonate ions exceeds the solubility product was detected and also modification of transport time of chemical ionic components was studied. By mathematical modeling, the decrease of distance from calcium chloride sink with increase of carbonate concentration was simulated. The mathematical description was also investigated when the gradient of an electric potential is used. Another family of curves was constructed as pH-distance curves which demonstrate pH increases with initial carbonate concentration.
OTS. Springer
This book covers the more basic aspects of carbonate minerals and their interaction with aqueous solutions; modern marine carbonate formation and sediments; carbonate diagenesis (early marine, meteoric and burial); the global cycle of carbon and human intervention; and the role of sedimentary carbonates as indicators of stability and changes in the Earth's surface environment. The selected subjects are presented with sufficient background information to enable the non-specialist to understand the basic chemistry involved. Tested on classes taught by the authors, and approved by the students, this comprehensive volume will prove itself to be a valuable reference source to students, researchers and professionals in the fields of oceanography, geochemistry, petrology, environmental science and petroleum geology.
Lectures on Electrochemical Corrosion Birkhäuser
This handbook presents the most important technologies concerning the reduction of fouling in heat exchangers and the appropriate technologies of removal and cleaning. Furthermore, the general and scientific fundamentals of heat transfer are explained. Written by experts from Germany, UK and the USA, this book is a reliable adviser for engineers, managers, technicians and students who want to have an overview concerning this field. Advertisements and a table of addresses will enable the reader to get in direct contract with the specialised problem solvers.
Bulletin Radian Book Company
Carbon Dioxide Equilibria and Their ApplicationsRoutledge
Simplified Procedure for Calculating Chemical Doses for Water Stabilization for Prevention of Internal Corrosion and Scaling UNP PRESS
Management of Problem Soils in Arid Ecosystems examines the challenges of managing soils in arid and semiarid regions. These soils contain low organic matter, are not leached, and accumulate lime, gypsum, and/or soluble salts, requiring special management and practices. This book discusses how to identify problems, reclaim the soils, and then use them efficiently and economically. Water management and desertification in these areas are also discussed. It contains extensive references as well as 40 tables and illustrations.
Management of Problem Soils in Arid Ecosystems Carbon Dioxide Equilibria and Their Applications
I. G OLOGY OF CALCIUM CARBO ATE 1 by Jacques Geyssant 1. Features and characteristics of calcium carbonate 2 1. 1 Calcium carbonate - a special compound 2 1. 2 The crystal forms of calcium carbonate - mineralogy 9 2. The limestones - development and classification 15 2. 1 Sedimentation 16 2. 2 Diagenesis - from sediment to rock 23 2. 3 Classification of the limestones 24 2. 4 Metamorphism - from limestone to marble 26 2. 5 Carbonatites - extraordinary limestones 29 3. Limestone deposits 31 3. 1 Recognition of limestones 31 3. 2 Distribution on the Earth's surface 33 3. 3 Limestone deposits in the geological ages 36 3. 4 CaC0 cycle 42 3 3. 5 Industrially exploitable CaC0 deposits 3 44 53 II. TH C LT RAt HI TORY F LIME TONE by Johannes Rohleder 1. The history of chalk 55 2. Marble and limestone 69 2. 1 Quarrying stones 70 2. 2 Transport, organisation and trade 80 2. 3 The uses 97 137 III. CALCI M CARBOl\ATE - A MODER RESOURCE 1. The beginnings: Calcium carbonate in glazing putty and rubber 138 by Johannes Rohleder 1. 1 A chalk industry is born 139 1. 2 Rubber and glazing putty 142 1. 3 From chalk to calcium carbonate 156 2. Calcium carbonate - pigment and filler 160 by Eberhard Huwald 2. 1 Properties and effects of a filler 164 2. 2 Chalk, limestone, marble, pec - common features and differences 165 2. 2.
Calcium Carbonate CRC Press
The 7th Edition of Gary Christian's Analytical Chemistry focuses on more in-depth coverage and information about Quantitative Analysis (aka Analytical Chemistry) and related fields. The content builds upon previous editions with more enhanced content

that deals with principles and techniques of quantitative analysis with more examples of analytical techniques drawn from areas such as clinical chemistry, life sciences, air and water pollution, and industrial analyses.

Complexes Affecting the Solubility of Calcium Carbonate in Water National Academies Press

Quanto conosciamo dell'oceano, grande protagonista dell'evoluzione della vita e delle attuali caratteristiche climatiche del nostro pianeta? Pochi sanno della sua reattività chimica, della sua alcalinità, dei sottili meccanismi che stanno alla base dei tanti equilibri e disequilibri chimici al suo interno. Il libro cerca di gettare luce sulle basi chimiche di questi fenomeni e sulla loro risoluzione matematica attraverso algoritmi relativamente semplici, comprensibili e spiegati in modo elementare. Sulla base di questo, vengono discusse alcune simulazioni, ma non solo, il lettore è messo in grado di effettuarne altre, sulla base dei programmi allegati. Si potranno così avere risposte scientifiche sui vari quesiti climatologici, come l'assorbimento e l'emissione di CO2, la formazione di carbonato di calcio negli oceani e altri aspetti di interesse e di attualità.

NEXAFS Spectroscopy Springer Science & Business Media

Most of the calcium carbonate removed from the oceans is precipitated out by pelagic organisms living in the upper layers of the world's oceans. However, only a small fraction of that amount accumulates on the ocean floor as sediments. Thus, there is the question of where the dissolution takes place. This question will not be finally answered until the chemical process of the dissolution in seawater is fully understood. Since most oceanic waters are out of equilibrium with the calcium carbonate system, it is more important to consider the kinetics of the reaction, rather than the equilibrium itself. Using the spinning disk method, an experimental set-up was devised to study the rate of dissolution of calcite in aqueous solutions. Different models were developed to describe the reaction and to estimate what chemical processes may take place. The object of this study was to compare the relative influence of individual seawater constituents such as Mg(++), Sr(++), Ba(++), Ca(++), SO4(--), PO4(3-), and dissolved organic matter, on the rate of calcite solution. (Author).

The Hydrolysis of Calcium Carbonate and Its Relation to the Alkalinity of Calcareous Soils Royal Society of Chemistry

This book documents the proceedings of the symposium, "Mineral Scale Formation and Inhibition," held at the American Chemical Society Annual Meeting August 21 to 26, 1994, in Washington, D. C. The symposium, sponsored by the Division of Colloid and Surface Chemistry, was held in honor of Professor George H. Nancollas for his pioneering work in the field of crystal growth from solution. A total of 30 papers were presented by a wide spectrum of scientists. This book also includes papers that were not presented but were in the symposium program. The separation of a solid by crystallization is one of the oldest and perhaps the most frequently used operations in chemistry. Because of its widespread applicability, in recent years there has been considerable interest exhibited by academic and industrial scientists in understanding the mechanisms of crystallization of sparingly soluble salts. The salt systems of great interest in industrial water treatment area (i. e. , cooling and boiler) include carbon ates, sulfates, phosphates, and phosphonates of alkaline earth metals. Although not as common as calcium carbonate and calcium sulfate, barium and strontium sulfates have long plagued oil field and gas production operations. The build-up of these sparingly soluble salts on equipment surfaces results in lower heat transfer efficiency, increased corrosion rates, increased pumping costs, etc. In the laundry application, insoluble calcium carbonate tends to accumulate on washed fabrics and washing equipment parts, resulting in undesirable fabric-encrustation or scaling.

A Versatile Material Springer Science & Business Media

This open access book discusses biogeochemical processes relevant to carbon and aims to provide readers, graduate students and researchers, with insight into the functioning of marine ecosystems. A carbon centric approach has been adopted, but other elements are included where relevant or needed. The book focuses on concepts and quantitative understanding of primary production, organic matter mineralization and sediment biogeochemistry. The impact of biogeochemical processes on inorganic carbon dynamics and organic matter transformation are also discussed.

Elsevier

Carbonates—Advances in Research and Application: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Calcium Carbonate. The editors have built Carbonates—Advances in Research and Application: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Calcium Carbonate 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 Carbonates—Advances in Research and Application: 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/.

Carbon Dioxide Equilibria and Their Applications IChemE

Conference proceedings of the Fourteenth American Society for Composites held on the September 27-29 1999 at the Holiday Inn-1675 Conference Centre, Fairborn, Ohio.