

Radiocarbon Dating 2nd Edition

Analytical Chemistry for the Study of Paintings and the Detection of Forgeries - Maria Perla Colombini 2022-09-08

Forgeries present a daunting problem to art historians, museums, galleries and curators who face challenges in determining the authenticity of paintings. Recent progress in science has led to the development of new methods for investigating works of art, and can provide new insights into the materials found in paintings. The rise in the value of paintings together with the knowledge and skills of forgers highlights the need to develop reliable scientific procedures to identify fakes. Given the complexity of materials in paintings and the convergence of various disciplines, a methodological approach for investigations of paintings is based on art historical, curatorial, aesthetic, technical and scientific evaluation. In this book sophisticated digital and analytical techniques are reviewed for the identification of materials (pigments, binders, varnishes, adhesives) and the physical characteristics of paintings such as brushstrokes, craquelure and canvas weaves. This book presents an updated overview of both non-invasive and micro-invasive techniques that enable the material characterization of paintings. The materials constituting a painting are reviewed, as are ways that changes in materials over time can provide insights into chronology and physical history. State-of the art digital methods including multi and hyper-spectral imaging and computational approaches to data treatment will be presented. Analytical techniques developed and optimized to characterize binders, varnishes, and pigments are reviewed, focusing on materials which can provide information on ageing or provenance. Case studies of applications of synchrotron-based methods and the analysis of paintings are given, as are chapters devoted to legal aspects related to authenticity. Chapter 1 is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

Geoarchaeology and Radiocarbon Chronology of Stone Age Northeast Asia - Vladimir V. Pitul'ko 2016-04-08

This English translation of a work previously published in Russian (*Geoarkheologiya i radiouglerodnaya khronologiya kamennogo veka Severo Vostochnoi Azii*, St. Petersburg: Nauka, 2010) presents an overview of the Paleolithic archaeology of Northeast Asia, with emphasis on geoarchaeological and radiocarbon-based chronology. Although archaeological investigations above the Arctic Circle began more than two hundred years ago, access to and publication of findings has been difficult. In *Geoarchaeology and Radiocarbon Chronology of Stone Age Northeast Asia*, veteran researchers Vladimir V. Pitul'ko and Elena Yu. Pavlova have gathered and analyzed the available data to provide comprehensive documentation of human occupation of continental territories far above the Arctic Circle in the late Neopleistocene (also known as the Late Pleistocene era). By using uncalibrated radiocarbon dating, Pitul'ko and Pavlova have been able to establish reliable correlations between the artifacts and phenomena being studied. The increased number of radiocarbon age determinations for these Arctic sites is the most important data to come from the latest studies of Northeast Asia, offering a significant opportunity for re-evaluation of older materials in light of these new findings. The authors include reporting on recent work performed at two of the most important sites in the region: the "mammoth cemetery" site at Berelekh and the Yana Rhinoceros Horn Site.

Radiocarbon Dating, by Willard F. Libby. 2nd Edition... - Willard F. Libby 1955

The Archaeologist's Laboratory - Edward B. Banning 2020-07-27

This second edition of the classic textbook, *The Archaeologist's Laboratory*, is a substantially revised work that offers updated information on the archaeological work that follows fieldwork, such as the processing and analysis of artifacts and other evidence. An overarching theme of this edition is the quality and validity of archaeological arguments and the data we use to support them. The book introduces many of the laboratory activities that archaeologists carry out and the ways we can present research results, including graphs and artifact illustrations. Part I introduces general topics concerning measurement error, data quality, research design, typology, probability and databases. It also includes data presentation, basic artifact

conservation, and laboratory safety. Part II offers brief surveys of the analysis of lithics and ground stone, pottery, metal artifacts, bone and shell artifacts, animal and plant remains, and sediments, as well as dating by stratigraphy, seriation and chronometric methods. It concludes with a chapter on archaeological illustration and publication. A new feature of the book is illustration of concepts through case studies from around the world and from the Palaeolithic to historical archaeology. The text is appropriate for senior undergraduate students and will also serve as a useful reference for graduate students and professional archaeologists.

Radiocarbon and Tritium Dating - 1965

Radiocarbon Dating - R.E. Taylor 2016-06-03

This volume is a major revision and expansion of Taylor's seminal book *Radiocarbon Dating: An Archaeological Perspective*. It covers the major advances and accomplishments of the ^{14}C method in archaeology and analyzes factors that affect the accuracy and precision of ^{14}C -based age estimates. In addition to reviewing the basic principles of the method, it examines ^{14}C dating anomalies and means to resolve them, and considers the critical application of ^{14}C data as a dating isotope with special emphasis on issues in Old and New World archaeology and late Quaternary paleoanthropology. This volume, again a benchmark for ^{14}C dating, critically reflects on the method and data that underpins, in so many cases, the validity of the chronologies used to understand the prehistoric archaeological record.

Radiocarbon Dating ... Second Edition - Willard F. Libby 1955

America's Past - Thomas Carl Patterson 1973

Radiocarbon Dating - R Taylor 2012-12-02

Radiocarbon Dating: An Archaeological Perspective provides a review of some of the major advances and accomplishments of the ^{14}C method from an archaeological perspective. The text also provides an introduction to some of the problems and issues involved in the use of ^{14}C data in archaeological studies. The book covers topics in radiocarbon dating, including the elements of the radiocarbon method; definition of major anomalies and the different effects of the ^{14}C method; and sample, sample pretreatment, and measurement techniques. The evaluation of radiocarbon data and the historical development of radiocarbon dating as a method that aids in archaeological studies are also discussed. The text is recommended for archaeologists who want to know more about the theories and principles behind radiocarbon dating, its techniques, and its application in their field. The book will also be good for physicists who want to work with archaeologists and apply their knowledge in radiocarbon dating.

Ancient Egypt: a Very Short Introduction, 2nd Edition - Ian Shaw 2021-01-28

The ancient Egyptians are an enduring source of fascination, from mummies and pyramids, to curses and rituals. In this second edition of his *Very Short Introduction*, Ian Shaw explores the history and culture of pharaonic Egypt, and examines the latest research on Ancient Egyptian ideas of death, kingship, religion, race, sex, and gender.

Archaeological Chemistry - Martin Levey 2016-11-11

Papers in English, French, and German. Sponsored by the Division of History of Chemistry of the American Chemical Society. Includes bibliographical references. This collection of studies in archeological chemistry is the most important ever devoted to this field. In these pages its difficult experimental problems are treated by an impressive group of experts from all over the globe. Nearly all archeological chemistry's investigative methods are described: infrared spectra, emission spectroscopy, chemical analysis, X-ray fluorescent spectroscopy, petrographic examination, probing by electronic sound and micrography, ^{14}C dating, and others. These papers were first presented at the Third Symposium on Archeological Chemistry in September 1962 under the auspices of the American Chemical Society. The symposium was to bring together the knowledge and techniques so that more and better investigation might be encouraged and receive the proper recognition. The studies in this book possess not only great qualitative interest in their own areas but have a collective value in their portrayal of the state

of affairs in the chemistry of ancient artifacts.
Radiocarbon Dating - Willard F. Libby 1955

Special Sources of Information on Isotopes - F. E. McKinney 1968

Radiocarbon Dating, Second Edition - R.E. Taylor 2014

This volume is a major revision and expansion of Taylor's seminal book *Radiocarbon Dating: An Archaeological Perspective*, again providing a benchmark for the method and critically reflecting on the data that underpins the chronologies used to understand the prehistoric archaeological record.

Nature's Clocks - Doug Macdougall 2008-06-30

"Radioactivity is like a clock that never needs adjusting," writes Doug Macdougall. "It would be hard to design a more reliable timekeeper." In *Nature's Clocks*, Macdougall tells how scientists who were seeking to understand the past arrived at the ingenious techniques they now use to determine the age of objects and organisms. By examining radiocarbon (C-14) dating—the best known of these methods—and several other techniques that geologists use to decode the distant past, Macdougall unwraps the last century's advances, explaining how they reveal the age of our fossil ancestors such as "Lucy," the timing of the dinosaurs' extinction, and the precise ages of tiny mineral grains that date from the beginning of the earth's history. In lively and accessible prose, he describes how the science of geochronology has developed and flourished. Relating these advances through the stories of the scientists themselves—James Hutton, William Smith, Arthur Holmes, Ernest Rutherford, Willard Libby, and Clair Patterson—Macdougall shows how they used ingenuity and inspiration to construct one of modern science's most significant accomplishments: a timescale for the earth's evolution and human prehistory.

Challenging Creation - 2nd Edition -

Quaternary Dating Methods - Mike Walker 2013-04-30

This introductory textbook introduces the basics of dating, the range of techniques available and the strengths and limitations of each of the principal methods. Coverage includes: the concept of time in Quaternary Science and related fields the history of dating from lithostratigraphy and biostratigraphy the development and application of radiometric methods different methods in dating: radiometric dating, incremental dating, relative dating and age equivalence Presented in a clear and straightforward manner with the minimum of technical detail, this text is a great introduction for both students and practitioners in the Earth, Environmental and Archaeological Sciences. Praise from the reviews: "This book is a must for any Quaternary scientist." *SOUTH AFRICAN GEOGRAPHICAL JOURNAL*, September 2006 "...very well organized, clearly and straightforwardly written and provides a good overview on the wide field of Quaternary dating methods..." *JOURNAL OF QUATERNARY SCIENCE*, January 2007

The Archaeology of Qumran and the Dead Sea Scrolls, 2nd ed. - Jodi Magness 2021-06-29

A Choice Outstanding Academic Title and winner of the Biblical Archaeology Society's Publication Award for Best Popular Book on Archaeology The Dead Sea Scrolls have been described as the most

important archaeological discovery of the twentieth century. Deposited in caves surrounding Qumran by members of a Jewish sect who lived at the site in the first century BCE and first century CE, they provide invaluable information about Judaism in the last centuries BCE. Like the Dead Sea Scrolls, the Qumran site continues to be the object of intense scholarly debate. In a book meant to introduce general readers to this fascinating area of study, veteran archaeologist Jodi Magness provides an overview of the archaeology of Qumran that incorporates information from the Dead Sea Scrolls and other contemporary sources. Magness identifies Qumran as a sectarian settlement, rejecting other interpretations including claims that Qumran was a villa rustica or manor house. By carefully analyzing the published information on Qumran, she refines the site's chronology, reinterprets the purpose of some of its rooms, and reexamines archaeological evidence for the presence of women and children in the settlement. Numerous photos and diagrams give readers a firsthand look at the site. Considered a standard text in the field for nearly two decades, *The Archaeology of Qumran and the Dead Sea Scrolls* is revised and updated throughout in its second edition in light of the publication of all the Dead Sea Scrolls and additional data from Roland de Vaux's excavations, as well as Yitzhak Magen and Yuval Peleg's more recent excavations. Specialists and nonspecialists alike will find here an overview of the Qumran site and the Dead Sea Scrolls that is both authoritative and accessible.

Radiocarbon After Four Decades - Ervin Taylor 2013-03-09

Radiocarbon After Four Decades: An Interdisciplinary Perspective commemorates the 40th anniversary of radiocarbon dating. The volume presents discussions of every aspect of this dating technique, as well as chronicles of its development and views of future advancements and applications. All of the 64 authors played major roles in establishment, development or application of this revolutionary scientific tool. The 35 chapters provide a solid foundation in the essential topics of radiocarbon dating: Historical Perspectives; The Natural Carbon Cycle; Instrumentation and Sample Preparation; Hydrology; Old World Archaeology; New World Archaeology; Earth Sciences; and Biomedical Applications.

Nonmetals, Second Edition - Monica Halka 2019-12-01

Praise for the previous edition: "...a solid addition to a high school and public library science collection. Recommended."—Library Media Connection Materials that are poor conductors of electricity are generally considered nonmetals. One important use of nonmetals is the ability to insulate against current flow. The Earth's atmosphere is composed of nonmetallic elements, but lightning can break down the electron bonds and allow huge voltages to make their way to the ground. Water in its pure form is nonmetallic, though it almost always contains impurities called electrolytes that allow for an electric field. With an exploration of the benefits and challenges to society, health, and the environment, *Nonmetals, Second Edition* provides readers with new developments in the research of nonmetals, including where they came from, how they fit into our current technological society, and where they may lead us. Written in an easy-to-read format, this newly updated full-color resource discusses new developments and dilemmas; past, present, and future uses of nonmetals in science and technology; and much more. Nonmetals explored in this title include hydrogen, carbon, nitrogen, phosphorus, oxygen, sulfur, and selenium.

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