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Archaeological Chemistry Materials, Methods, and Meaning

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Archaeological Chemistry Materials Methods And Meaning Acs Symposium Series

Koen H. A. Janssens



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Archaeological Chemistry A Mark Pollard, Carl Heron, Ruth Ann Armitage, 2020-08-28 The use of chemistry in archaeology can help archaeologists answer questions about the nature and origin of the many organic and inorganic finds recovered through excavation providing valuable information about the social history of humankind This textbook tackles the fundamental issues in chemical studies of archaeological materials Examining the most widely used analytical techniques in archaeology the third edition of this comprehensive textbook features a new chapter on proteomics capturing significant developments in protein recognition for dating and characterisation The textbook has been updated to encompass the latest developments in the field The textbook explores several archaeological investigations in which chemistry has been employed in tracing the origins of or in studying artefacts and includes chapters on obsidian ceramics glass metals and resins It is an essential companion to students in archaeological science and chemistry as well as to archaeologists and those involved in conserving human artefacts

Archaeological Chemistry A. M. Pollard, Carl Heron, 2008 The application of chemistry within archaeology is an important and fascinating area It allows the archaeologist to answer such questions as what is this artefact made of where did it come from and how has it been changed through burial in the ground providing pointers to the earliest history of mankind Archaeological Chemistry begins with a brief description of the goals and history of archaeological science and the place of chemistry within it It sets out the most widely used analytical techniques in archaeology and compares them in the light of relevant applications The book includes an analysis of several specific archaeological investigations in which chemistry has been employed in tracing the origins of or in preserving artefacts The choice of these investigations conforms to themes based on analytical techniques and includes chapters on obsidian ceramics glass metals and resins Finally it suggests a future role for chemical and biochemical applications in archaeology Archaeological Chemistry enables scientists to tackle the fundamental issues of chemical change in the archaeological materials in order to advance the study of the past It will prove an essential companion to students in archaeological science and chemistry field and museum archaeologists and all those involved in conserving human artefacts

Analytical Chemistry in Archaeology A. M. Pollard, C. M. Batt, B. Stern, S. M. M. Young, 2007-01-18 This book is an introductory manual that explains the basic concepts of chemistry behind scientific analytical techniques and that reviews their application to archaeology It explains key terminology outlines the procedures to be followed in order to produce good data and describes the function of the basic instrumentation required to carry out those procedures The manual contains chapters on the basic chemistry and physics necessary to understand the techniques used in analytical chemistry with more detailed chapters on Atomic Absorption Inductively Coupled Plasma Emission Spectroscopy Neutron Activation Analysis X ray Fluorescence Electron Microscopy Infra red and Raman Spectroscopy and Mass Spectrometry Each chapter describes the operation of the instruments some hints on the practicalities and a review of the application of the technique to archaeology including some case studies With

guides to further reading on the topic it is an essential tool for practitioners researchers and advanced students alike

Chemicals and Methods for Conservation and Restoration Johannes Karl Fink, 2017-06-23 Before the 1970s most information concerning the conservation and restoration of paintings wood and archaeological artefacts were focused on the history of the artefacts previous attempts of conservation and the future use of these artefacts The technical methods of how the restoration and conservation were made were dealt with only very briefly Today sophisticated methods of scientific analysis such as DNA are common place and this encourages conservators and scientists to work together to work out the development of new methods for analysis and conservation of artefacts This book focuses on the chemicals used for conservation and restoration of various artefacts in artwork and archaeology as well as special applications of these materials Also the methods used both methods for cleaning conservation and restoration as well as methods for the analysis of the state of the respective artefacts Topics include oil paintings paper conservation textiles and dyes for them archaeological wood fossils stones metals and metallic coins and glasses including church windows

Mass Spectrometry Handbook Mike S. Lee, 2012-05-08 Due to its enormous sensitivity and ease of use mass spectrometry has grown into the analytical tool of choice in most industries and areas of research This unique reference provides an extensive library of methods used in mass spectrometry covering applications of mass spectrometry in fields as diverse as drug discovery environmental science forensic science clinical analysis polymers oil composition doping cellular research semiconductor ceramics metals and alloys and homeland security The book provides the reader with a protocol for the technique described including sampling methods and explains why to use a particular method and not others Essential for MS specialists working in industrial environmental and clinical fields

Modern Methods for Analysing Archaeological and Historical Glass Koen H. A. Janssens, 2013-01-29 The first scientific volume to compile the modern analytical techniques for glass analysis Modern Methods for Analysing Archaeological and Historical Glass presents an up to date description of the physico chemical methods suitable for determining the composition of glass and for speciation of specific components This unique resource presents members of Association Internationale pour l'Histoire du Verre as well as university scholars with a number of case studies where the effective use of one or more of these methods for elucidating a particular cultural historical or historical technical aspect of glass manufacturing technology is documented

The Oxford Handbook of the Archaeology of Diet Julia Lee-Thorp, M. Anne Katzenberg, 2024-06-24 Humans are unique among animals for the wide diversity of foods and food preparation techniques that are intertwined with regional cultural distinctions around the world The Oxford Handbook of the Archaeology of Diet explores evidence for human diet from our earliest ancestors through the dispersal of our species across the globe As populations expanded people encountered new plants and animals and learned how to exploit them for food and other resources Today globalization aside the results manifest in a wide array of traditional cuisines based on locally available indigenous and domesticated plants and animals How did this complexity emerge When did early hominins actively

incorporate animal foods into their diets and later exploit marine and freshwater resources What were the effects of reliance on domesticated grains such as maize and rice on past populations and the health of individuals How did a domesticated plant like maize move from its place of origin to the northernmost regions where it can be grown Importantly how do we discover this information and what can be deduced about human health biology and cultural practices in the past and present Such questions are explored in thirty three chapters written by leading researchers in the study of human dietary adaptations The approaches encompass everything from information gleaned from comparisons with our nearest primate relatives tools used in procuring and preparing foods skeletal remains chemical or genetic indicators of diet and genetic variation and modern or historical ethnographic observations Examples are drawn from across the globe and information on the research methods used is embedded within each chapter The Handbook provides a comprehensive reference work for advanced undergraduate and graduate students and for professionals seeking authoritative essays on specific topics about diet in the human past

Archaeological Chemistry Mary Virginia Orna, Seth C. Rasmussen, 2020-11-24 Highlighting its broad multidisciplinary nature this volume presents new research and applications in the field of archaeological chemistry which focuses on the application of chemical techniques to the study of the material remains of the cultures of historical or prehistorical peoples Consisting of 18 chapters written by a diverse collection of international authors this volume highlights new research in archaeological chemistry and shows how the field combines aspects of analytical chemistry history archaeology and materials science Current efforts to include archaeological chemistry in science education are also presented As this book utilizes current scientific advances to better understand our past it will be of broad general interest to the chemical archaeological and historical communities

Histories of Maize John Staller, Robert Tykot, Bruce Benz, 2016-12-05 Maize has been described as a primary catalyst to complex sociocultural development in the Americas State of the art research on maize chronology molecular biology and stable carbon isotope research on ancient human diets have provided additional lines of evidence on the changing role of maize through time and space and its spread throughout the Americas The multidisciplinary evidence from the social and biological sciences presented in this volume have generated a much more complex picture of the economic political and religious significance of maize The volume also includes ethnographic research on the uses and roles of maize in indigenous cultures and a linguistic section that includes chapters on indigenous folk taxonomies and the role and meaning of maize to the development of civilization Histories of Maize is the most comprehensive reference source on the botanical genetic archaeological and anthropological aspects of ancient maize published to date This book will appeal to a varied audience and have no titles competing with it because of its breadth and scope The volume offers a single source of high quality summary information unavailable elsewhere

Histories of Maize in Mesoamerica John Staller, Robert Tykot, Bruce Benz, 2016-06-16 This volume reprints 20 chapters from the editors comprehensive Histories of Maize 2006 that are relevant to Mesoamerican specialists and students New findings and

interpretations from the past three years have been included. *Histories of Maize* is the most comprehensive reference source on the botanical, genetic, archaeological, and anthropological aspects of ancient maize published. Included in this abridged volume are new introductory and concluding chapters and updated material on isotopic research. State-of-the-art research on maize chronology, molecular biology, and stable carbon isotope research on ancient human diets have provided additional lines of evidence on the changing role of maize through time and space and its spread throughout the Americas. The multidisciplinary evidence from the social and biological sciences presented in this volume have generated a much more complex picture of the economic, political, and religious significance of maize.

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