Step by Step: Tracing World Potting Traditions Through Ceramic Petrography
Chairs: Domenique Sorresso and Anthony Farace

The term *chaîne opératoire*, or the chain of production, is used to describe the whole process of ceramic manufacture. By understanding this process, we may investigate the series of operations that transform raw materials into a finished product. Qualitative and quantitative ceramic petrographic methods are uniquely suited to identify production methods, such as paste preparation, forming techniques, and firing atmosphere. Petrographic data can be utilized to characterize the different *chaînes opératoires* present in a ceramic assemblage so they might be ultimately connected to the intention of the potter. These baseline data can then be used for comparative analyses of production step sequences and to define local and regional communities of practice. This session brings together case studies from around the world using thin-section petrography along with other complimentary methods, some of which aim to home in on individual steps while others analyze the chain of production in its entirety. By using these data to identify cultural patterns, these processes may be further used to answer larger questions such as those of identity and practice in relation to the spread of these chains of production.

Identifying Potting Traditions from the Nashville Basin through Ceramic Petrography
Domenique Sorresso (University of Florida), C. Trevor Duke (Clemson University), and Charles Cobb (Florida Museum of Natural History)

This paper aims to investigate ceramic manufacturing in the Nashville Basin of Tennessee during the Mississippian period (AD 1000–1500) at the macroscopic and microscopic levels. Our vessel lot and petrographic studies analyze 73 shell-tempered pottery sherds from seven Middle Cumberland archaeological sites. We utilize form and function information, point-counting data, and qualitative observations in thinsection to examine the chain of operations used to create these vessels. While this study aims to investigate the entire chaîne opératoire, it emphasizes paste preparation. We use these data to compare the steps of ceramic craft production between sites and aim to define local and regional potting traditions. Our results suggest that production steps were often consistent between sites, but recipes varied both over the centuries of the Mississippian time period and across the Middle Cumberland River drainage in Tennessee.

Ramey on the Frontier: A Pilot Study of Select Ramey Incised Technology from Cahokia's Southern Neighbors
Anthony Farace (University of Florida)

Cahokia's influence on the archaeological cultures of the upper Central Mississippi River Valley (CMRV) has often been described as less prominent than processes taking place in the northern hinterlands. Although few examples are found at each site, Ramey Incised jars are found in many early and middle Mississippian (AD 10001300) occupations in the CMRV, and archaeologists debate the role they played in everyday life and a localized Mississippian identity. This pilot study looks at the ceramic microstructure (ceramic petrography), use-wear, and contextual information of a few Ramey Incised jars from archaeological sites in western Kentucky and across the Mississippi in southeastern Missouri to produce detailed object itineraries. Petrographic results describe production methods used to create the vessels including estimations of base clays, clay mixing, firing environment, and formation methods. Use-wear and other contextual information are used to form inferences about where and how the jars were used at the sampled archaeological sites. The presentation compares these detailed itineraries with utilitarian, local vessels to establish similarities and differences in production and use during the height of Cahokia

to the north. The presentation ends by introducing future goals and further research being developed about Mississippianization of Cahokia's southern neighbors.

The Struggle Within: Effects of Spanish Interaction Intensity on Pueblo Pottery Technology as Revealed through Petrographic Study
Kari Schleher (Maxwell Museum, University of New Mexico) and Suzanne Eckert (Arizona State Museum, University of Arizona)

Spanish intrusion, colonization, and missionization impacted many aspects of life for the Pueblo people. Examination of ceramic technology provides a way to recognize cultural continuity and transformation in Pueblo communities as well as highlighting the role of Indigenous agency in determining the structure of those communities prior to and after Spanish contact. Previous research on pottery producing foragers and historic expediency helps to identify variables most likely to inform on expediency in ceramic technology during the contentious colonial period. In this study, we examine decorated pottery for evidence of potters adopting expedient ceramic technology in three types of New Mexico Pueblo communities. The Pueblo residents living in each of these communities experienced different types of contact with Spanish invaders or colonizers. At San Marcos, a Franciscan mission was established. At Piedras Marcadas, the Coronado expedition lay siege to the community and fought the Pueblo's residents. At many villages along the Rio Abajo, no missions were established. We couch our interpretations of pottery production in these communities in a framework of agency and practice to address the active role of material culture in potters' daily attempts to negotiate their place within a dramatically changing world.

Making Pottery, Making Identity: Geochemical and Design Analyses from a Small Middle San Juan Site, New Mexico
Genevieve Woodhead (University of New Mexico)

This study addresses both the geochemical composition and the decorative content of ceramic sherds recovered from the Box B Site (LA 16660), New Mexico. Thorough and successful ceramic analyses by Barbara Mills, Hayward Franklin, and Elizabeth Garrett took place in the 1980s. This current project reexamines white ware ceramics from ca. AD 1100 by taking a communities of practice approach and integrating both compositional and decorative analyses. The goal is to better understand how potters from a small residential site located along the border of two large Ancestral Pueblo ceramic traditions—Chaco and Mesa Verde—practiced pottery-making in the midst of a regional power shift from Chaco Canyon to the north. Compositional data, collected through petrography and scanning electron microscopy (SEM), reveal raw material procurement, slip and paste recipes, and even firing conditions. Painted decorations speak to identity formation in a potential borderland setting.

Long-Term Use of Local Clays in Potting Traditions during Early Urbanization in the Nochixtlán Valley of the Mixteca Alta, Oaxaca, Mexico, 500–100 BCE
Karleen Ronsairo (George Washington University)

The Mixteca Alta Ceramic Study (MACS) in the Nochixtlán Valley of Oaxaca, Mexico, aims to understand how early urbanization in the valley impacted potters' crafting techniques over time and space. Early urbanization in the valley spanned the Yucuita and Early Ramos ceramic phases (500–100 BCE) of the Middle to Late Formative periods. Stylistic differences between Yucuita and Early Ramos pottery from two urban centers in the valley, Yucuita and Etlatongo, indicate that potters adapted their crafting techniques in surface finishes, vessel forms, and designs during this 400-year period of urbanization. For this study, petrography was performed on raw clay samples from the Nochixtlán Valley and on pottery

samples from Yucuita and Etlatongo to gain more insight into potters' technological choices in the earlier production stages of clay procurement and paste preparation. The petrographic data coupled with geochemical data obtained from neutron activation analysis (NAA) show that potters procured the same local clays to craft different pottery styles and paste recipes throughout the Yucuita and Early Ramos ceramic phases. Potters' long-term use of local clays during this period shows that their technological choices in clay procurement and paste preparation persisted through time despite significant sociopolitical change and urbanization in the region.

Potting Communities on a Purépecha Landscape, Angamuco, Michoacán, Mexico
Anna Cohen (Utah State University)

Documentation of the chaîne opératoire allows us to investigate the manufacturing steps that transform raw materials into finished products. Study of these steps can facilitate discussions about the intentions of ancient potters and potter communities of practice. In western Mesoamerica during the Late Postclassic period (AD 1350–1530), potters within the Purépecha Empire created imperial-style pottery with spouts and globular supports that were often decorated with polychrome coloration and resist firing treatments. These imperialstyle vessels may have been created in a centralized location in the imperial core region. One way to examine these vessels is by focusing on the production chain of imperial-style vessels at a site within the core region that was occupied before, during, and after the empire developed in the Middle to Late Postclassic periods. Previous petrographic and geochemical work at the site of Angamuco (Michoacán, Mexico) indicates that ceramics, including imperial style vessels, were created from both local and regional raw materials, and that these raw materials did not change drastically for over 1,000 years (ca. AD 250–1530). Study of several production steps in the Angamuco pottery considers the possibility of multiple communities of potters who operated as an empire coalesced.

Organic Inclusions in Amazonian Ceramics: A Petrographic Approach
Ximena Villagran, Marcony Alves, Thiago Kater, Kelly Brandão, and Francisco Pugliese (University of Sao Paulo)

Organic inclusions, such as freshwater spicules (cauixi) and tree bark ash (caraipé) are one of the most diagnostic elements of pottery production in the Amazon basin. At the Monte Castelo shell mound (southwestern Amazonia), Bacabal pottery represents the widespread use of sponge spicules in the ceramic paste, from ca. 4000 BP. Bacabal pottery is one of the oldest in Amazonia and petrographic analyses revealed a pottery recipe kept for nearly 3,000 years that involved a relatively unchanged proportion of clay and sponge spicules in the paste. Petrographic data, combined with regional sampling of clay sources, expanded the discussion of intentional addition of spicules to the ceramic paste and/or selection of naturally sponge-rich clay sources. The promising results allowed new lines of work, extending the petrographic studies done at Monte Castelo to other sites in the Southwest, Central, and Lower Amazon. Here we will present the results of the petrographic study of Bacabal pottery and new research focusing on the development and use of organic material in Amazonian ceramics, its technological advantages, and geographical and cultural expansion.

Ceramic Use and Production at Iron Age Bashtepe, Uzbekistan: A Preliminary Petrographic Study
Mary Ownby (Ownby Analytical LLC) and Fiona Kidd (NYU-Abu Dhabi)

The ceramic corpus at Bashtepe, Uzbekistan, is a complex mix of pottery forms, fabrics, and technology. Some vessels are hand-made, while others are wheel-made. Transport vessels, cooking pots, and fine ware are all present. To better understand the acquisition and local production of this corpus, a

preliminary petrographic study was conducted. This focused on analysis of samples from each of the 22 fabric groups identified. Clay samples from the site were included to assess local raw material characteristics. The goal was to begin to understand the chaîne opératoire for those vessels likely made at Bashtepe and those brought to the site from elsewhere. Thus, the ceramic traditions could be better understood regionally and related to the role that the site played in the broader cultural landscape.