



EUROPEAN ACADEMY
of Sciences and Arts

COLLOQUIUM of the Global p-XRF Network with European Academy of Sciences & Arts



Colloquia on portable X-Ray Fluorescence

May 6th 2026, 05:00-07:00 pm CET

Dr. Lucas R. M. Johnson

"Always Toward Validity: An Overview of Basics in Obsidian Analysis using Portable XRF"

Abstract:

Several seminal text assert portable XRF (pXRF) analysts of obsidian must follow step-wise processes to ensure a result is valid. Methods in the process include a statistical determination of reliability, precision, and accuracy of both standards and artifacts. A relatively full understanding of particular XRF instrumentation is also part of the process. The steps are not complex, but can take days to perform and may require a new analyst work with more experienced users to obtain some well-characterized standard. The presentation follows such steps to reinforce base-line methods ensuring those new to pXRF are aware of assumptions in calibrations, have evaluated them, and publish results that are reproducible.

Dr. Jeffrey Ferguson

"Understanding Obsidian Source Distribution Patterns with Distance-Decay and Complex Spatial Models"

Abstract:

Cultures with flaked stone technology used obsidian for a wide variety of tool types, wherever it was available. Archaeologists have used obsidian sourcing to enable fine-scale analysis of mobility, exchange, social and political interaction, and cultural boundaries because of its general ease in connecting artifacts to specific geologic sources. Regional studies of obsidian in a few areas of the world have focused on examining exchange systems through observed distributions of artifacts as well as more advanced approaches such as social network analysis. We add to this literature with a new approach that uses two models of obsidian distribution. The first model focuses only on the systematic distance-decay of obsidian radiating out from sources and accounts for competition between sources, while the second captures the more complex spatial patterning driven by additional social processes. The differences between the two models highlight sociocultural complexities worthy of further exploration that differ from basic economic distance-decay expectations. The models, and their differences, are applied to the American Southwest as an initial case study to reveal many important cultural influences on obsidian use and distribution.

Led by the network and endorsed by the European Academy of Sciences & Arts/STEMAC Expert Group, we are organizing a series of online colloquia to explore the use of pXRF in archaeology and cultural heritage. The colloquia aim to provide a platform for knowledge exchange, featuring expert presentations from both the natural sciences and the humanities. Each session will include 30-minute talks by specialists from archaeology and natural sciences, followed by a 30-minute discussion. Topics include:

- Resources and guidance for the XRF community
- Case studies and exemplary applications
- Opportunities for knowledge exchange

Recordings of the colloquia will be available, and participants can submit case study reviews for publication in PEASA (www.peasa.eu).

Contact us:

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