

Session Proposal of the UISPP Commission 'Functional Studies of Prehistoric Artefacts and their Socio-Economic Significance'

Beyond Microscopy: Advanced Surface Analysis and Imaging Integration in Functional Studies of Archaeological Artefacts

Keywords: Traceology, Methodology, Multimodal Integration, Surface Characterization

Functional studies of archaeological artefacts, traditionally based on observations at microscopic level, increasingly rely on multimodal, high-resolution surface analysis to reveal evidence of production, use, and modification. Recent advances in digital imaging and physicochemical characterization integrate multiscale 3D visualization, parametric analysis, and diverse spectroscopic methods, generating complementary qualitative and quantitative data on surface morphology, texture, composition, and properties. Combining these approaches enhances analytical precision, reproducibility, and interpretive depth, bridging the gap between visual observation and measurable evidence as well as facilitating cross-laboratory collaboration and comparison, and in turn deepening our understanding of surface transformation processes. This session will emphasize methodological innovations and case studies that integrate multimodal surface data—geometric, chemical, and textural—to investigate functional aspects across materials such as stone, bone, ivory, antler, clay, wood, tooth, and shell, among others. By emphasizing the synergy of qualitative imaging data and quantitative physical and chemical perspectives, the session explores how multimodal surface analysis integration can transform functional studies in archaeology, enhancing our comprehension of artefact biographies, use-life, and technological behavior in prehistory and across a wide geographical context.

The UISPP Commission 'Functional Studies of Prehistoric Artifacts and their Socio-Economic Significance' invites traceologists and archaeologists who work in the interdisciplinary field of use-wear and residue analysis to present their latest research and the application of new techniques in surface analysis to contribute to the methodological debate, and to bring prehistoric tool uses in context with technological advancement, subsistence strategies and adaptation to different environments.