

---

# VIS-spectroscopy as a tool for silex raw material analysis

Eileen Eckmeier\*<sup>†1</sup> and Birgit Gehlen<sup>2</sup>

<sup>1</sup>Ludwig-Maximilians-Universität München – LMU München, Department of Geography, Luisenstr. 37, 80333 München, Allemagne

<sup>2</sup>Institut für Ur- und Frühgeschichte – Institut für Ur- und Frühgeschichte, Universität zu Köln, Weyertal 125, 50931 Köln, Allemagne

## Résumé

The origin of silex material that was used for the production of lithic tools is an important source of information concerning trade or migration routes in prehistory. The silex, or flint, varieties that were used for the production of lithic artefacts are often characterised by subtly different colors, or different grades of lightness. These colors can be determined using spectrophotometrical analysis.

We measured the color spectra, or the reflectance spectra of visible light (VIS-spectroscopy) of neolithic lithic artefacts and of recent raw material samples using a Konica Minolta CM 700d spectrophotometer, which has a measuring diameter of 8 mm. The measured spectral data was converted to CIE L\*a\*b\* color values. The aim was to compare and differentiate between flint material from different sources, mainly from quarries in Belgium, the Netherlands and Northern France.

The measured pieces were selected from 70 silex species groups in the reference collection of the Institute of Prehistoric Archaeology of the University of Cologne. Seven surface categories were defined, of which two categories were chosen for the measurements – artificial prehistoric and recent surfaces. We also tested if recent knapping surfaces and the surfaces of prehistoric material have comparable colors, and if similar surface characteristics can be found in the same raw material group. One difficulty was that the material is usually heterogeneous, and that a flat surface is needed to place the measuring device, therefore an average of at least three measurements per piece was calculated and used for statistical evaluation. First results showed that specific silex groups can be differentiated by their color and their luminance values, e.g. silex varieties from Hesbaye and the Obourg region in Belgium or the Lousberg material. Therefore the color measurements could be a fast and easy tool for predetermining and silex species, prior to geochemical analyses.

**Mots-Clés:** silex analysis, color measurement

---

\*Intervenant

<sup>†</sup>Auteur correspondant: e.eckmeier@lmu.de