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Bone Needles and Soft Vegetal Working: Example of Khirokitia (7th millenium cal. B.C. - Cyprus)

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The site of Khirokitia – 7th millennium to the first half of the 6th millennium cal. B.C. – illustrates the latest phase of the aceramic Neolithic in Cyprus (Le Brun 2001) (fig. 1).

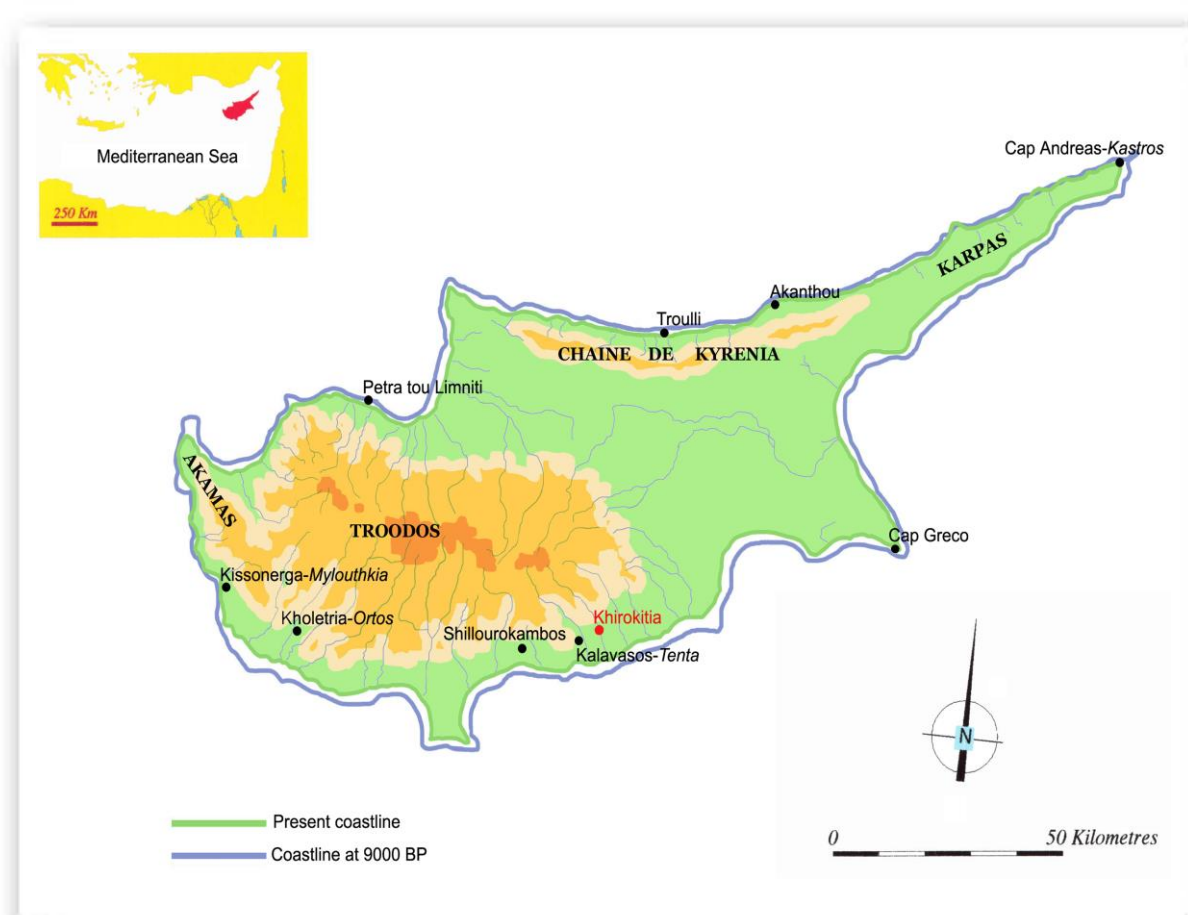


Fig. 1 : Aceramic Neolithic settlements (Adapted from Gomez & Pease 1992).

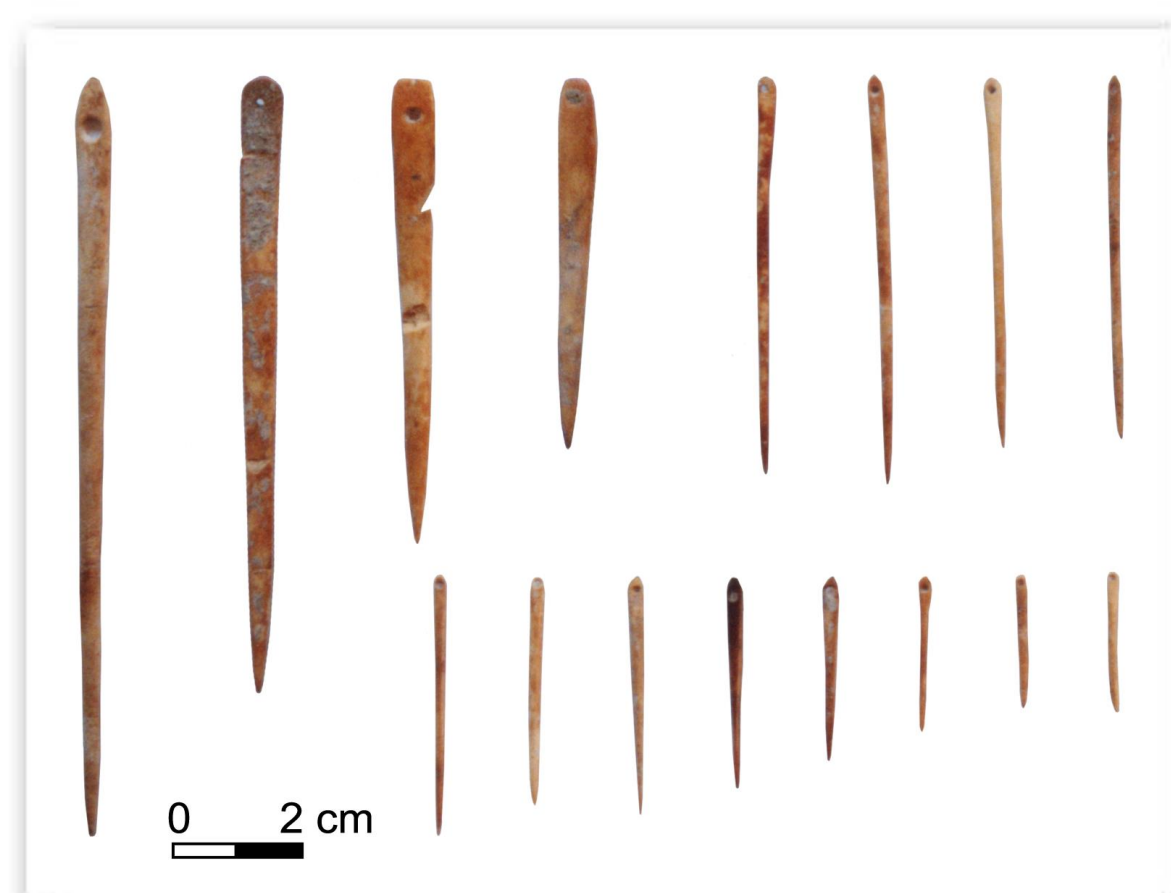


Fig. 2: Khirokitia bone needles.

A total of 626 needles and 50 unfinished ones over 2317 bone artifacts, were recovered (fig. 2). Based on its good surface preservation, a sample of 156 complete or fragmented needles has been selected to carry out the functional study. Our aim is to identify the worked materials and to test the functional homogeneity of the tools in order to explore the possibility of a craft production involving the use of needles.

Methodology

The methodology employed includes experimentations and microscopic examination with low (up to 64x) and high magnifications (100x and 200x). Based on archaeological and ethnographic data, an experimental program on leather and flax fabrics sewing has been settled (fig. 3 & fig. 4). Use-times varied from 15 to 120 minutes. The sewing thread used was flax.

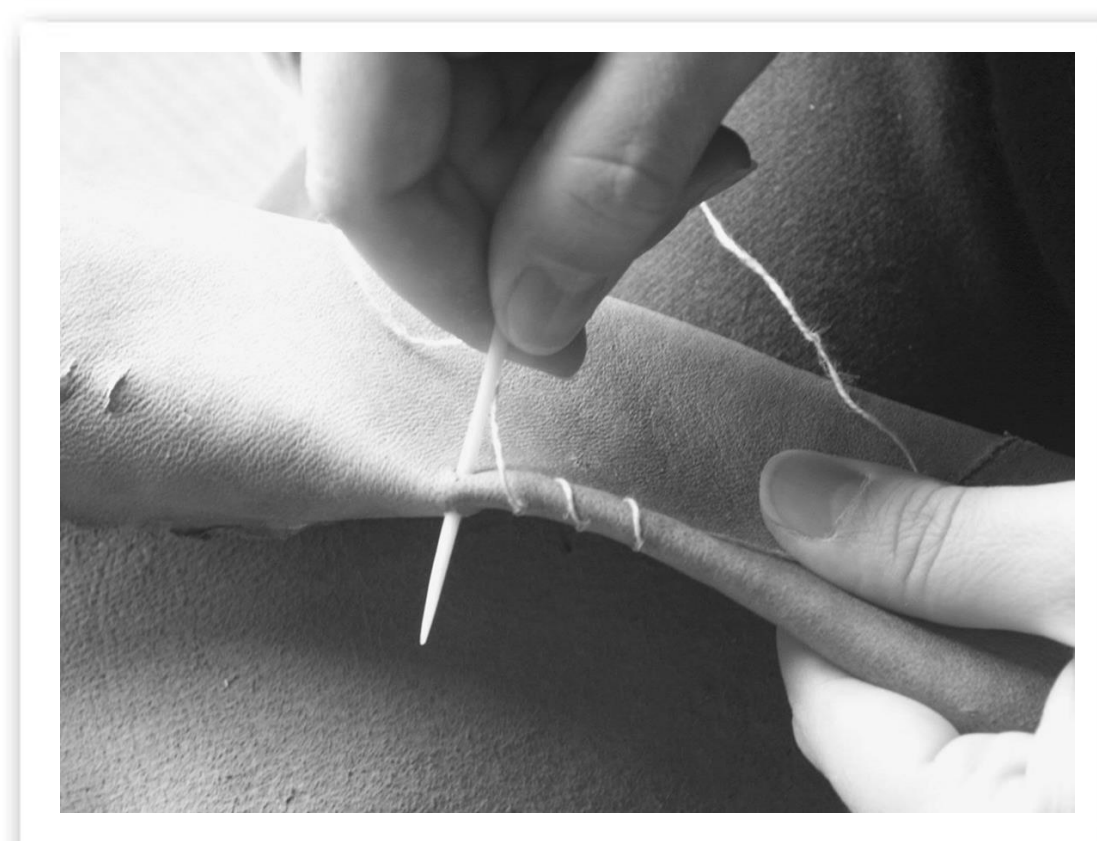


Fig. 3: Leather sewing.



Fig. 4: Flax sewing.

The macroscopic analysis led was inspired by I. Sidéra methodology, in particular “volume alterations” (Sidéra 1993). High magnifications provided by the metallographic microscope allow a more detailed study of the surface alterations. We follow the methodology settled by R. Christidou which takes into account all the micro use phenomena relating to surface abrasion (Christidou 1999).

Use-wear analysis

Macroscopic analysis shows that most of the needles are worn all along their length. On the tip, three kind of volume alterations – smoothing, chippings and crushing – have been identified, but smoothing appears as the most common wear observed. It can mainly concerns the entire tip but also only one side of it (21.66%) (fig. 5). This specific localization indicates that needles could be held oblique to the worked material and not perpendicular. This movement remembers the one made in embroidery work.

Fig. 5: A facet around 3-4mm long is created showing the contact face between the needle and the worked material.



Smoothing can also be observed on the surface and inside the eye. Different degrees of smoothing have been measured according to the eye volume deformation. the wear process, “chaîne d’usure”, from the less used needle to the highest used one can thus be restored (Sidéra and Giacobini 2002) (fig. 6). Within the sample, a majority of needle eye is middle deformed (41.49%).

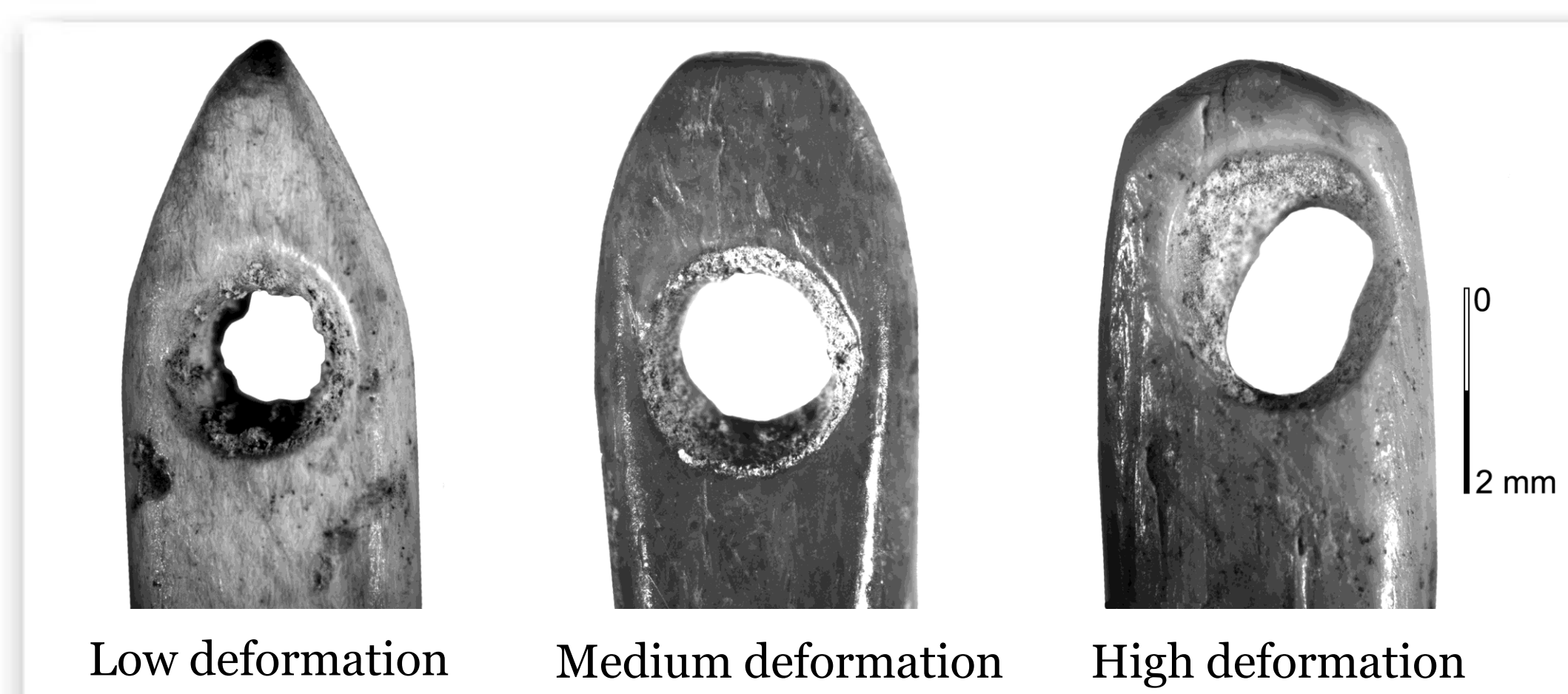


Fig. 6: Different degrees of eye volume deformation.

Microscopic wear patterns consist, for a great majority of needles, to a regularization of the original surface topography and to a smoothing of the elevations (fig. 7). The surface is varnished and covered by a well developed striations which appear as multi-directional, straight, long and short, fine (less than 1µm), superficial and continuous. Numerous craters micro pits are also observed. This use remembers the one observed on experimental needles used to sew flax fabrics but some differences can be noticed (fig. 8).

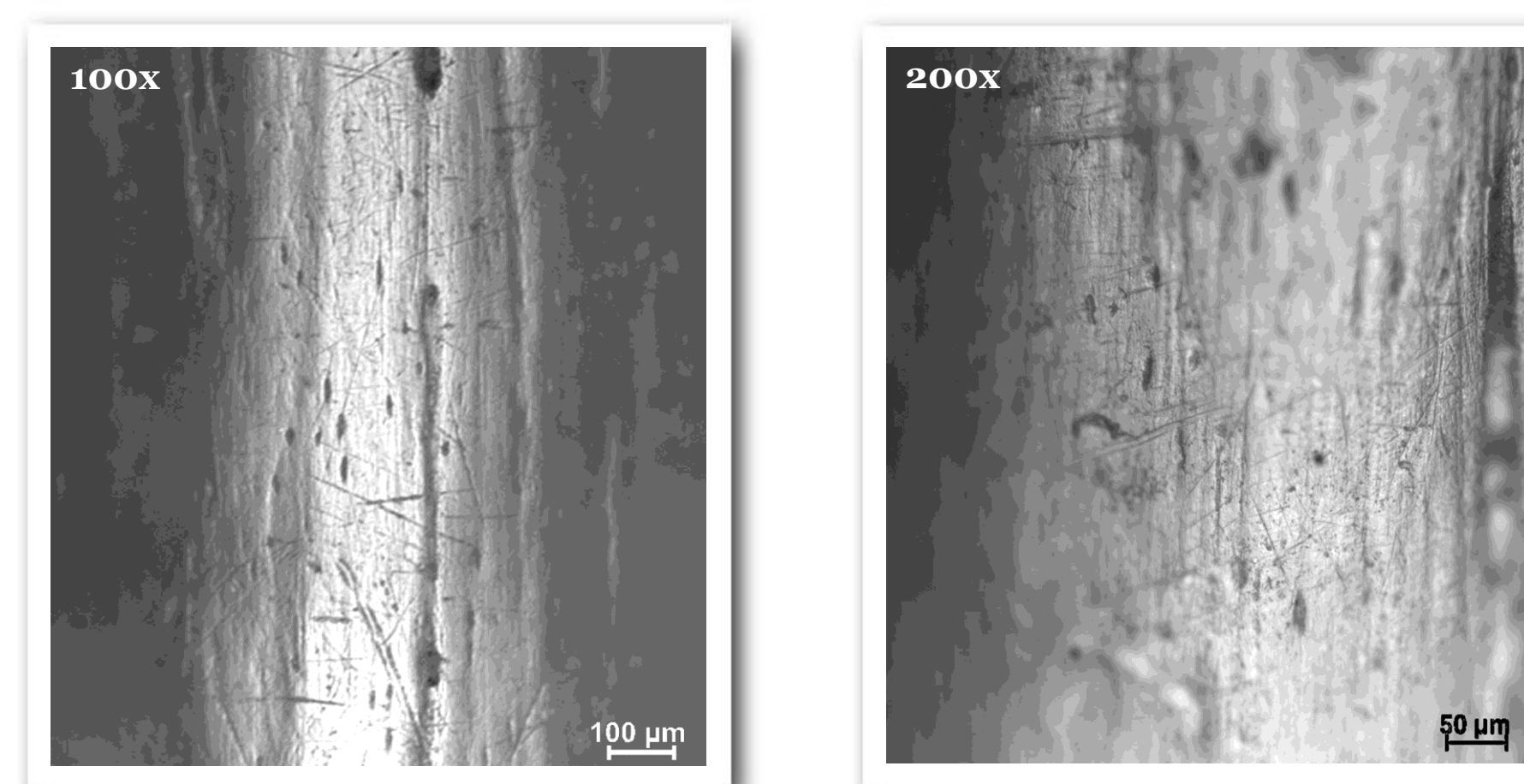


Fig. 7: Archaeological needle.

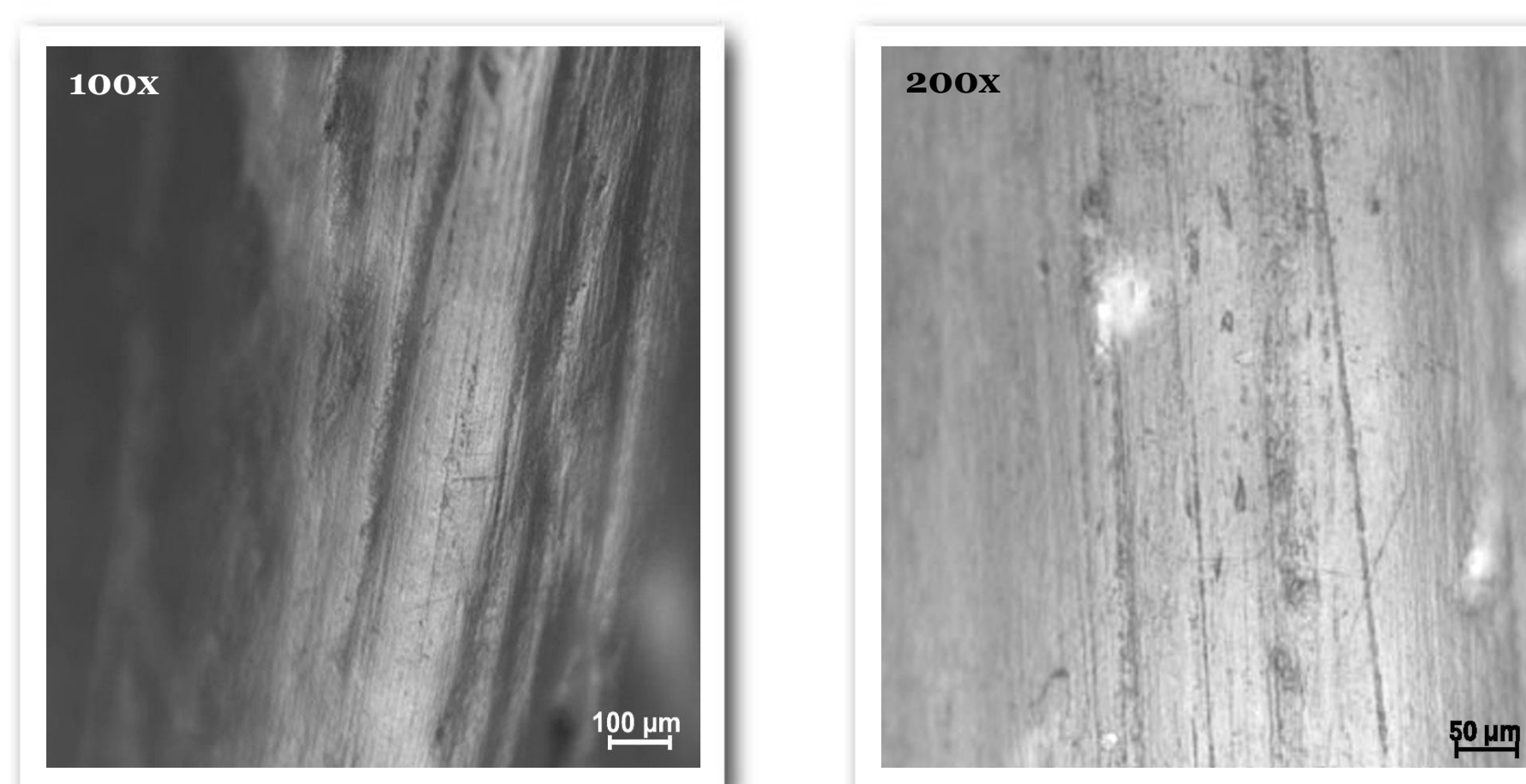


Fig. 8: Experimental needle used to sew flax fabric during 120 minutes.

Conclusion

The use-wear analysis reveals that Khirokitia needles were certainly used on soft vegetal fibers. But evidences of flax sewing can not be determined in the archaeological sample. To a certain degree this could be due to problems related to the intensity of use of the tools. Experimentation showed that use-wear develops very slowly on the surface. Moreover various fibers could be used such as inner bark (Barber 1991). Experimentation may set in the future new standards of identification of the use of the various vegetal fibers. Nevertheless, Khirokitia needles show a certain functional homogeneity which can be interpreted as a craft production according to a possible embroidery tradition.

References

- Barber E.J.W., 1991, *Prehistoric Textiles: the development of cloth in the Neolithic and Bronze Ages with special reference to the Aegean*, Princeton University Press, Princeton, 471 p.
 Christidou R., 1999, *Outils en os néolithique du nord de la Grèce: étude technologique*. Thèse de doctorat, Université de Paris X, 3 volumes, 418 p.
 Le Brun A., 2001, At the Other End of the Sequence: The Cypriot Aceramic Neolithic as Seen from Khirokitia, in : S. Swiny (Ed.), *The earliest prehistory of Cyprus from colonization to exploitation*, Boston, Caari Monograph Series, Number 5 : 109-118.
 Gomez B. et Pease P.P., 1992, Early Holocene cypriot coastal palaeogeography, *Report of the Department of Antiquities: 1-8*.
 Sidéra I., 1993, *Les assemblages osseux en bassins parisien et rhénan du VI^e au IV^e millénaire B.C. Histoire, techno-économie et culture*. Thèse de doctorat, Université de Paris I, 3 volumes, 636 p.
 Sidéra I. avec la collaboration de Giacobini G., 2002, Outils, armes et parures en os funéraires à la fin du Néolithique, d’après Val-de-Reuil et Porte-Joie (Eure), *Gallia Préhistoire*, 44: 215-230.