Favella. Un villaggio neolitico nella Sibaritide. 2009, pp. 387-389.

Bernard Gratuze, Sophie Boucetta

7.3. Provenance study of obsidian blades

Analytical procedure

The artefacts have been analysed using the new analytical procedure developed in 2005 and based on X-rays fluorescence spectrometry. Differing from LA-ICP-MS analysis, no sampling is needed by this technique and the analysis is totally non destructive.

Source detection was made by comparing directly the net normalised X-rays fluorescence signals of the artefacts with those of geological obsidian samples, without needing to determine the real composition of the artefacts. It is however possible to obtain absolute concentration by using classical linear regression. For each element the linear regression coefficients were calculated using the net measured signal on different obsidian reference samples and their known concentration values. This method allows a good discrimination of everyone Central Mediterranean obsidian source (Lipari, Sardinia, Palmarola and Pantelleria).

The X -rays spectrometer, which was used here, is a portable system allowing on site analysis. It is equipped with two different X-rays tubes: one with a molybdenum cathode and one with a tungsten cathode. Obsidian analysis is carried out using the tungsten tube.

Measurement parameters are the following:

- tube voltage = 45kV;
- current intensity = 0.8 mA;
- measurement duration = 20 min;
- no filter used;
- X-rays collimator = 1.5 mm.

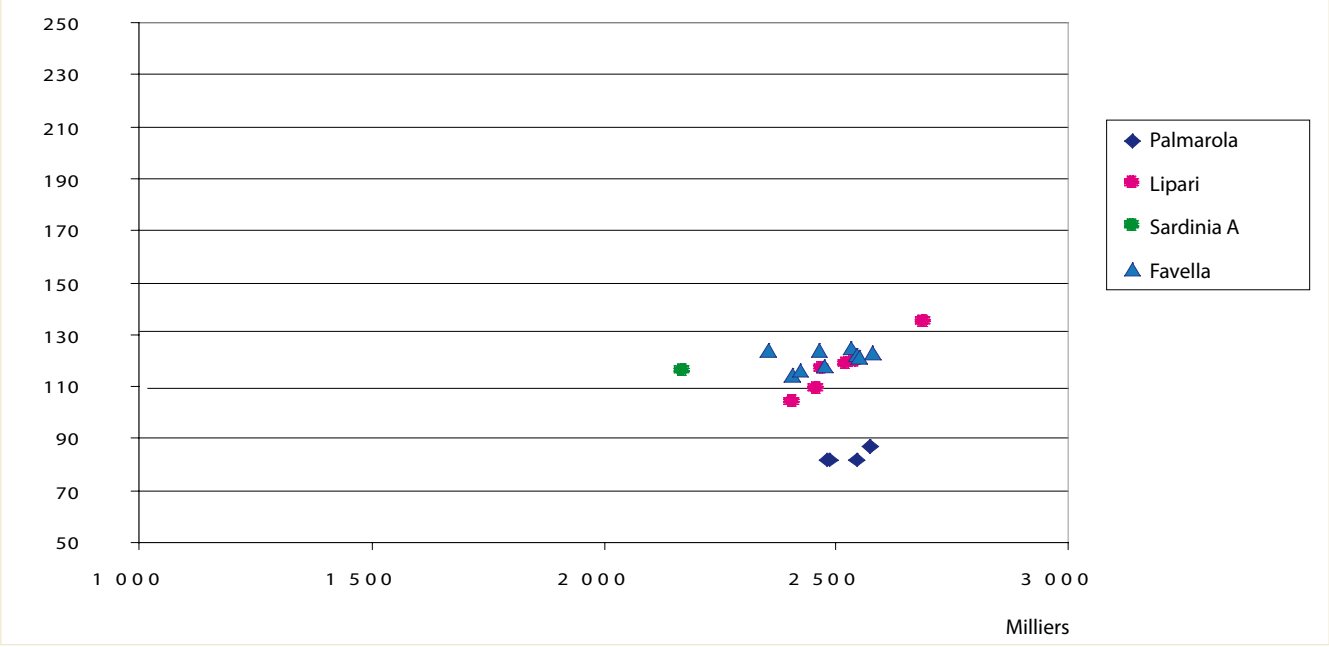


Figure 1 - Diagram iron versus calcium showing that all the Favella's artefacts come from Lipari.

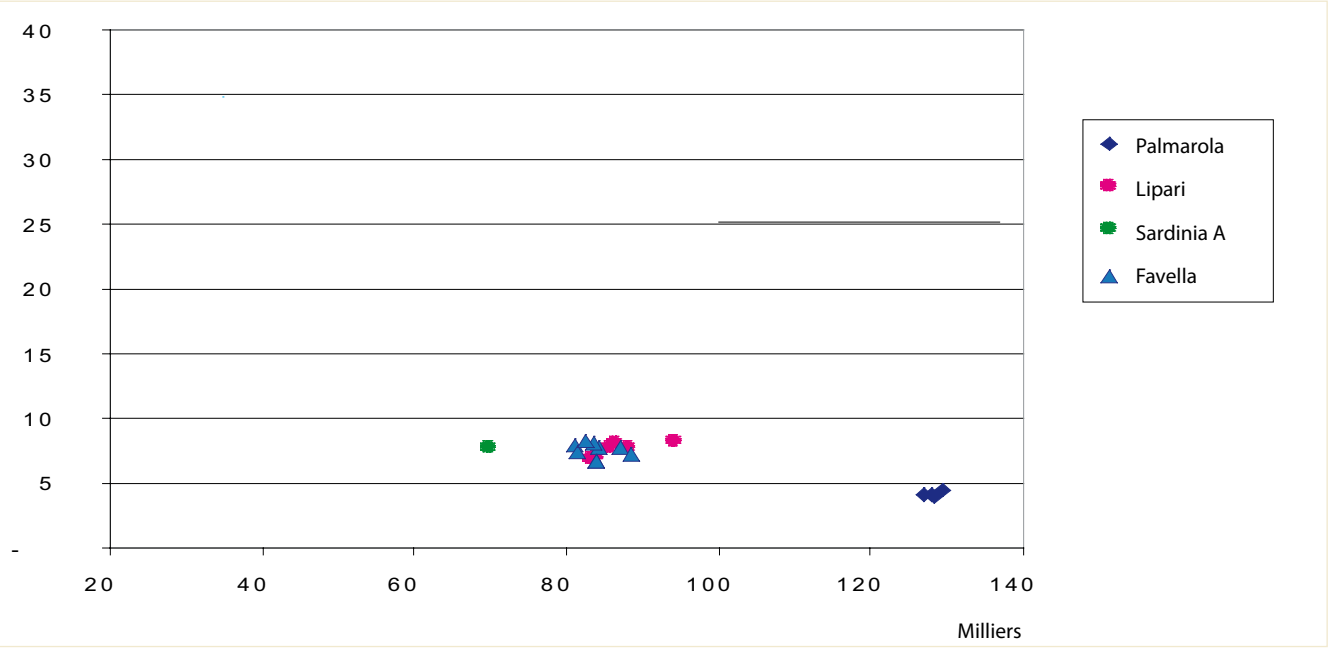


Figure 2. Diagram rubidium versus strontium showing that all the Favella's artefacts come from Lipari.

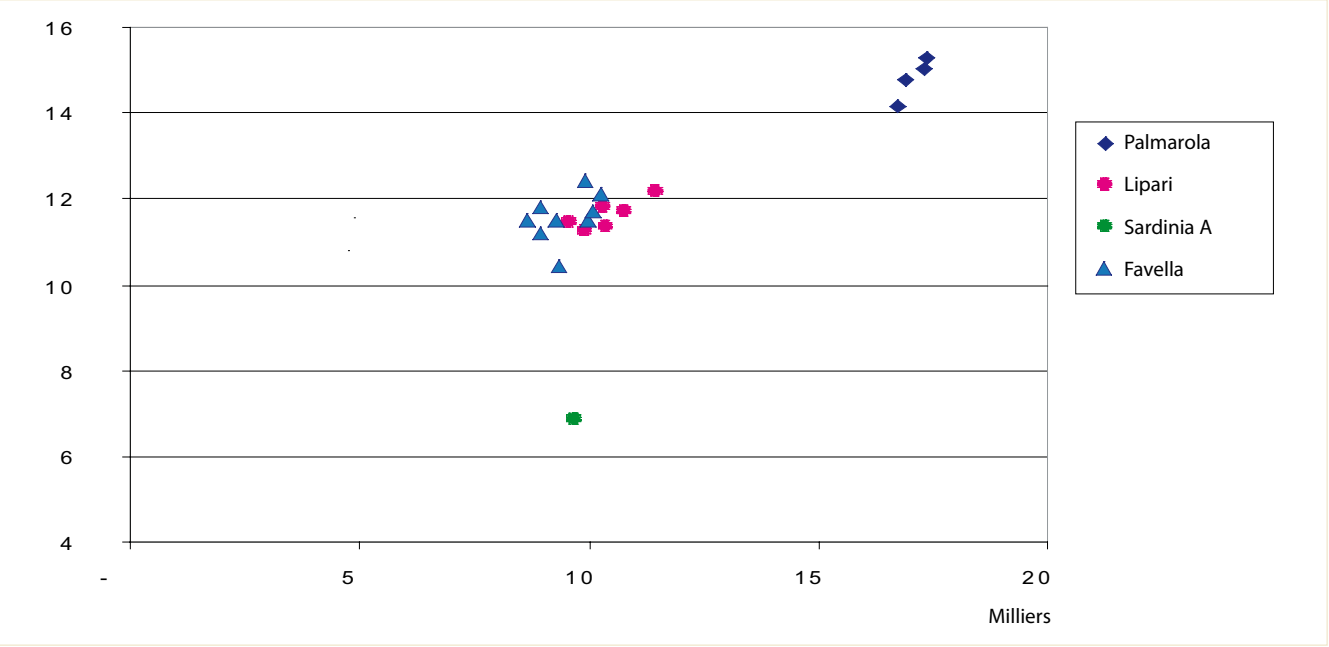


Figure 3. Diagram niobium versus yttrium showing that all the Favella's artefacts come from Lipari.

Results

The results obtained show clearly that the nine obsidian artefacts (fig. 4) analyzed come from Lipari (figs. 1, 2 and 3).

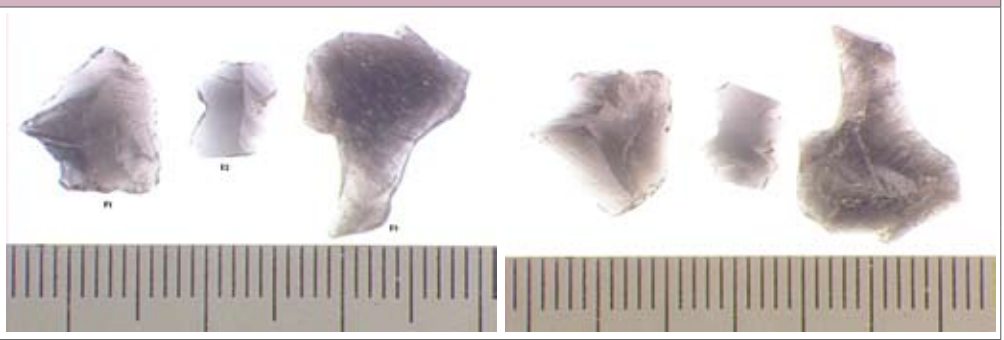
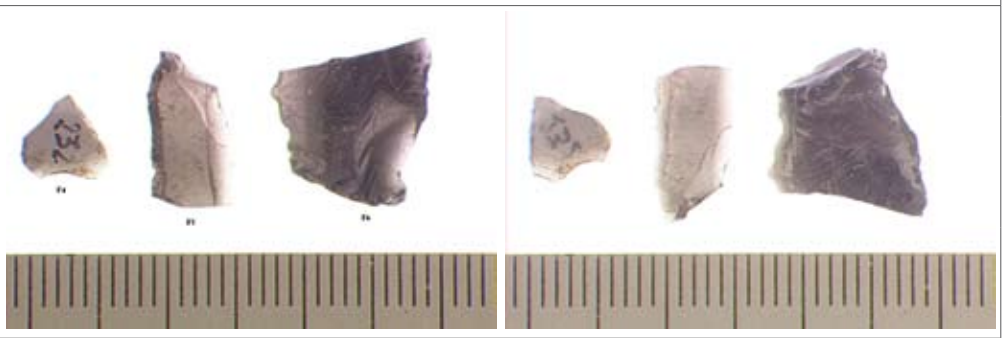
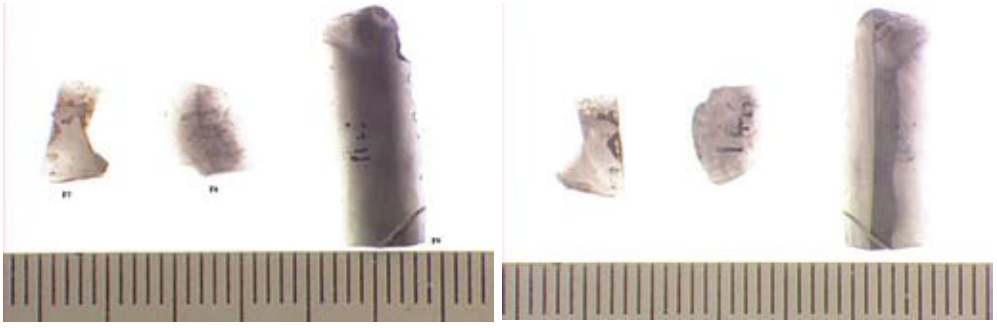
Favella	
F1 (inv. 872; E/10/4) hypermicroflakelet 12 x 10 mm	
F2 (inv. 897; E/20/3, XIII) hypermicroflakelet 8 x 6 mm	
F3 (inv. 916; E/30/3, VIII) microflakelets 12 x 18 mm	
F4 (inv. 232; A/A3/4, VIII) hypermicroflakelet fragment 5 x 7 mm	
F5 (inv. 386; A/E3/4, V) microbladelet fragment 12 x 6 mm	
F6 (inv. 1125a; G/M6/3B) microflakelet 14 x 12 mm	
F7 (inv. 419; A/B4-5/4, XIII) hypermicroflakelet 9 x 5 mm	
F8 (inv. 146; A/B3/4, XIII) hypermicroflakelet 8 x 6 mm	
F9 (inv. 1125b; G/M6/3B) microbladelet fragment 21 x 6 mm	

Figure 4. Obsidian samples from Favella.