

# Unravelling the past of glazed beads using accelerator-based techniques

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A set of glazed beads was discovered in Lisbon during an archaeological survey performed on an ancient vessel. The archaeological interpretations allow a chronological framework in the period between the last quarter of the 18th century and the beginning of the 19th century. Questions arise regarding the provenance of the accounts, as these can provide clues about the route traced by the vessel. Beads have different colours, from pale orange to dark blue/black and five of them (figure 1) were studied by using non-destructive techniques, in order to achieve the chemical and mineralogical composition.

X-ray diffraction results revealed quartz as the main constituent of the analysed beads. Iron oxides and manganese compounds may also occur, particularly on the orangish and dark beads, respectively.

The presence of Si was confirmed by means of PIXE technique, where it was also possible to identify Fe, K, Ca, S and Cl elements in all the beads (figure 2). The beads also emit light of different colours when irradiated with 2MeV proton beam. It is planned to perform ionoluminescence to identify impurities responsible for the light emission and results will be also presented.



Figure 1. Photograph of the glass beads.

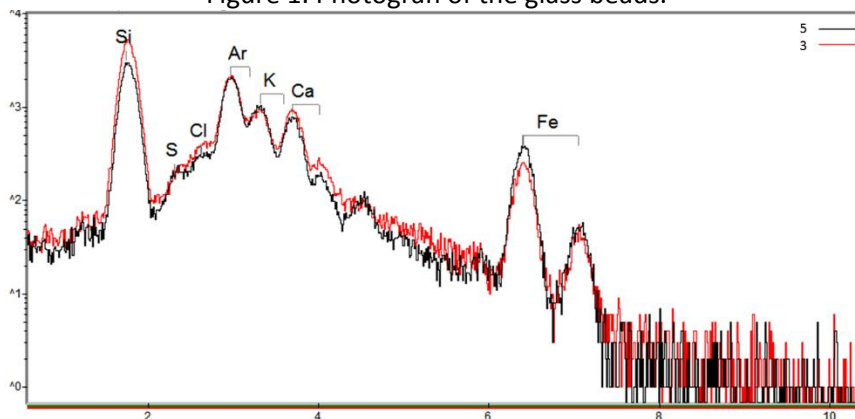


Figure 2. PIXE spectra of glass beads (3 and 5) acquired with a 2 MeV proton beam and open atmosphere.