

**ARCHAEOMETRIC STUDIES OF BACABAL'S POTTERY**

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The analyzes carried out in this work aims to contribute to the discussion about the ceramic objects founded in Monte Castelos sambaqui located at south-west Amazonia. The first study accomplished by Miller in 1980 suggests that this archaeological site is inserted in the old contexts of production of ceramics in the Amazon. Until today, there aren't any archaeometric studies in this ceramics and this kind of studies may help archaeological studies performed at the sambaqui. With this purpose, this work presents a preliminary study of chemical characterization of eighty-seven ceramic samples using the Neutron Activation Analysis (NAA). This analytical technique has been used because presents high sensitivity, precision and accuracy, essential characteristics to detect small variations in the concentration of the chemical elements contained in the ceramic fragments, at trace or ultra-trace levels. For the analysis the ceramic fragments were washed with water and the external surface was cleaned with tungsten carbide drill bits. Then, holes in different internal parts of each of the fragments were made to obtain sample in the form of powder, whose were dried in an oven at 105°C for 24 hours and stored in a desiccator. After this procedure, approximately 100mg of ceramic samples, of the Constituent Elements in Coal Fly Ash Reference Material (NIST-SRM-1633b), used as standard, and IAEA Soil-7 (Trace Elements in Soil), used as quality control, were irradiated for eight hours at the IEA-R1 reactor of IPEN-CNEN/SP, under a thermal neutrons flux of  $1.6 \times 10^{11} \text{ n cm}^{-2} \text{ s}^{-1}$ . Two measurement series were carried out using a Germanium (hyperpure) detector from Canberra. The mass fraction of Na, La, Sm, Yb, Lu and U were measured after 7 day cooling time and Sc, Cr, Fe, Co, Zn, Rb, Cs, Ce, Eu, Hf and Th after 25-30 days. However, in the interpretation of the dataset were considered only the elements with precision less than 10% (Yb, Lu, U, Zn, Rb and Hf). With the purpose to study the similarity/dissimilarity between the samples, two multivariate statistical techniques were used. Initially the mass fraction of the elements were converted to base log 10 and then cluster and discriminant analysis were used in order to assess similarities among samples. The results showed the existence of three different chemical groups that are in agreement with the archaeological studies made by Miller which found a sequence of cultural development, with three main occupational components whose dating ranging from 8.400 to 4.000 b.P. In this way, the results of this work corroborate with miller's studies and suggest Bacabal's phase as the oldest ceramist culture in the Southwest of the Amazon.

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