

INAA: A link between past and present in retrieving of peoples' identities.

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The chemical analysis on ceramics samples can provide information about production centers, trade route identification, raw material, object exchange, and prehistoric people mobility patterns. In the last ten years, INAA method at IPEN-CNEN/SP has being used on ceramics of archaeological sites from several states such as São Paulo, Sergipe, Minas Gerais, Pernambuco, Mato Grosso do Sul, and Amazonas in collaboration with various archaeologists in analysis of hundreds of archaeological specimens. The sample preparation is made using a tungsten carbide drill bit. In addition, the powdered samples are dried in an oven at 105°C for 24h and irradiated in the swimming pool research reactor at IPEN-CNEN/SP, IEA-R1, at a thermal neutron flux of about $5 \times 10^{12} \text{ n cm}^{-2} \text{ s}^{-1}$ for 8 h. Arsenic, Ba, K, La, Lu, Na, Nd, Sm, and Yb are measured after 7-day cooling time and Ce, Cr, Cs, Eu, Fe, Hf, Rb, Sb, Sc, Tb, Th, Zn and U after 3 or 4 week time. The data set are studied using several multivariate statistical methods, such as Mahalanobis distance, cluster analysis, principal components analysis, discriminant analysis, kernel density, Procrustes analysis, neural network, among other statistical methods. Through chemical composition it is possible to verify clay origin and to prove in this way the similarity between the clays of the ceramic objects and the probable source of their raw material.