

# TL DATING OF POTTERY FROM SÃO PAULO II ARCHAEOLOGICAL SITE, BRAZIL

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**Introduction:** The São Pablo II archaeological site (SPII) is located on the left margin of the Solimões River, near the Coari city, state of Amazon, Brazil. A previous study by Tamanaha [1] has shown that the ceramics belongs to a phase called Guarita.

The investigation of ceramics under different aspects can provides us with the methodology used in manufacturing ceramics, dynamics of economical nature and cultural and social development of ancient people. Such investigation has contributed to understand not only geographical occupation as well as cultural heritage of ancient people. The dating complet such investigation.

**Experimental:** The ceramics collected from SPII were sandpapered to eliminate about 2 mm throughout the ceramic surface to remove any external unknown effect. In the following, the samples were crushed and sieved to retain grain sizes between 0.08-0.180 mm. Thereafter, the powder was subjected to chemical cleaning with H<sub>2</sub>O<sub>2</sub>, HF and HCl procedure that helps eliminate organic and some inorganic particles and separate the quartz grains. The thermoluminescence (TL) measurements were carried out in an automatic TL reader Daybreak model 1100 TL, keeping a heating rate of 4 °C/s. The annual dose rate (D<sub>an</sub>) was calculated from the concentration of U, Th and K of ceramics determined by neutron activation analysis (NAA) at the IEA-R1 Reactor of IPEN/ CENEN-SP. Cosmic rays contribution of about 0.25 mGy/a was added in D<sub>an</sub>.

**Results and Discussion:** The TL glow curve of the quartz grains shows peaks at 120, 200 and 320-370 °C. The high temperature peak at 320-370 °C was used for determination of accumulated dose, D<sub>ac</sub> by additive method (see Fig. 1).

The annual dose value was estimated from uranium, thorium and potassium concentrations obtained by NAA. The results of dating 4 pottery fragments are shown in Table 1.

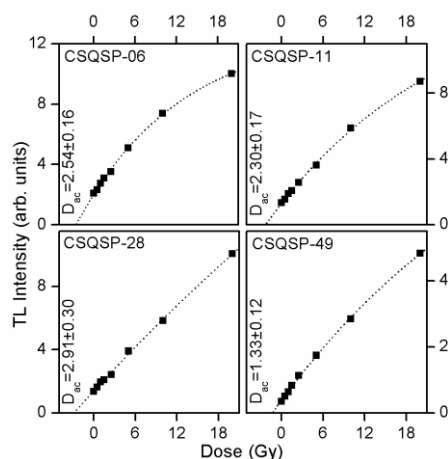


Fig. 1 TL intensity in function of the dose added

Table 1 Accumulated dose, annual dose and age of the fragments of ceramic samples obtained by TL.

Sample	D <sub>an</sub> (mGy/year)	D <sub>ac</sub> (Gy)	Age (year a.C)
CSQSP06	2.58±0.12	2.54±0.16	1027±78
CSQSP11	2.06±0.08	2.30±0.17	895±92
CSQSP28	3.35±0.17	2.91±0.30	1142±100
CSQSP49	1.28±0.12	1.33±0.12	978±141

**Conclusions:** Four ceramics sample from SPII investigated here, were obtained ages between 900 and 1200 years. Therefore the results confirm the archaeological interpretation on the chronology of the occupation by indian communities that occurred in this region of the central Amazon of Brazil.

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## References:

[1] Tamanaha, E.K., 2012, Ocupação policroma no baixo e médio rio Solimões, Estado do Amazonas. São Paulo. Dissertação de Mestrado – Museu de Arqueologia e Etnologia da USP