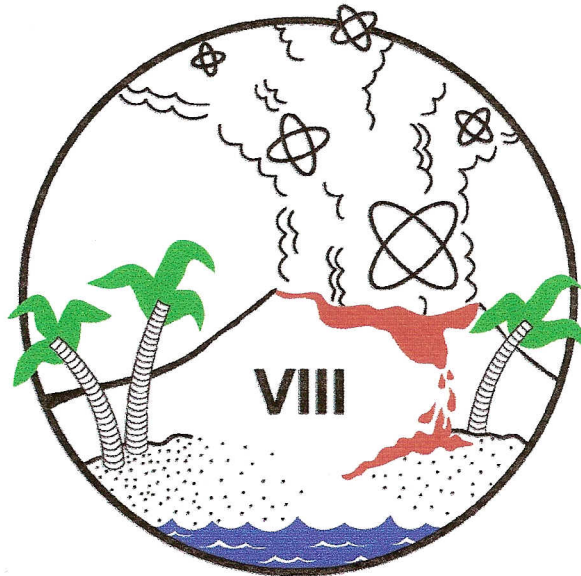


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# ABSTRACTS

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MARC VIII



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Log: 165. **TRACE ELEMENT COMPARISON IN SOUND AND CARIOUS HUMAN TEETH BY INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS.** Saiki, M(1), Adachi, LK(2), Adachi, EM(1). 1. Instituto de Pesquisas Energéticas e Nucleares, IPEN-CNEN/SP, 2. Faculdade de Odontologia, Departamento de Protese, Universidade de São Paulo..

Very little is known about the role of trace elements in teeth. However, some trace elements like fluoride play an important function in reducing the incidence of caries. In this study a comparison was made between element levels present in sound and carious teeth. Adult carious and sound teeth were obtained from a population residing in the coastal city of Santos, SP, Brazil. The enamel tissue was mechanically separated from the dentine by a dentist using appropriate tools. These samples were cleaned, dried, ground in an agate mortar and analyzed by instrumental neutron activation analysis. Aliquots of the samples and elemental standards were irradiated for 8 hours under a thermal neutron flux of the IEA-R1 nuclear research reactor. The induced gamma activities were measured in a gamma ray spectrometer coupled to a hyperpure Ge detector. Element concentrations obtained in enamel and dentine indicated significant differences for the elements Ca and Zn and no difference for Na and Sr. In the comparison between sound and carious teeth, higher concentrations of Sr and Zn were found in carious enamel tissues than those presented in sound ones. On the other hand, carious enamel tissues presented higher concentrations of Na, Sr and Zn. No difference in Ca and Na concentrations was found in sound and carious enamel tissues. The findings of this study were also compared to those literature results. The certified reference materials were also analyzed to control the quality results.

Log: 166. **SEPARATION OF TECHNETIUM FROM URANIUM FOR THE UREX PROCESS.** Edward Mausolf(1), Frederic Poineau(1), Cynthia Gong(1), Ken Czerwinski(1), and Thomas Hartmann(1), Department of Chemistry and The Harry Reid Center, University of Nevada, Las Vegas Gordon D. Jarvinen(2), Nuclear Materials Technology Division, Los Alamos.

The initial process of the US Advanced Fuel Cycle Initiative program is designed to separate uranium in an aqueous-based solvent extraction process (UREX) from other products. Uranium and technetium are extracted from the dissolved fuel during the first step (UREX Segment); then, technetium is removed from the U/Tc product by an ion exchange process. A major objective of this separation is to process the recovered Tc for production of a final disposable waste form such as Tc-Zr and Tc-SS-Zr alloys, which are potential candidate waste forms for Tc immobilize. Presented is the elution of pertechnetate from the Reillex HP and Eichrom WBEC anion exchange resins and preliminary structural analysis of a technetium containing waste form. Comparison of the resins elution profiles, characteristics, sorption capacities and their ability to recover Tc for conversion to metal or metallic waste forms are compared under various conditions. Additionally, pertechnetate may be eluted competitively with ammonium hydroxide or nitric acid; the kinetics and equilibria of these eluants are compared with the reaction of Tc with