saturação. As sínteses são efetuadas numa célula eletroquímica de três eletrodos, tendo como eletrodo auxiliar uma placa de platina platinizada com superfície superior a do eletrodo de trabalho e como eletrodo de referência de potencial usa-se um eletrodo reversível de hidrogênio. As sínteses ocorrem entre os potenciais de 50 mV_{ERH} e 1,05 V_{ERH}, ao longo de 30 ciclos. A integridade eletroquímica, propriedades redox, do material polimérico é verificada através de voltametrías cíclicas efetuadas em diferentes velocidades de varredura, no intervalo de 50 mV_{ERH} a 750 mV_{ERH}, na ausência de monômero. Os eletrodos recobertos com PAni são sistematicamente expostos a radiação X e novamente submetidos sucessivas varreduras voltamétricas. Os resultados indicam que a degradação é progressiva e bastante regular. O comportamento redox da PAni é afetado de forma irreversível e parece ser proporcional à dose de radiação absorvida [2, 3]. Essas evidências conduzem a possibilidade de aproveitamento deste material como matriz ativa para utilização em dispositivos sensores, indicadores ou dosímetros de radiações ionizantes, dependendo da sensibilidade dos filmes.

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[02/09/03 - Poster]

STANDARDIZATION OF Ca-45 RADIOACTIVE SOLUTION BY TRACING METHOD

Cláudia Regina Ponte Ponge-Ferreira, Marina Fallone Koskinas, Mauro da Silva Dias

This paper describes the procedure followed by the Laboratório de Metrologia Nuclear (LMN) at the IPEN - CNEN/SP, in São Paulo, for the standardization of ^{45}Ca. This radionuclide is a beta-pure emitter needing special tracing and extrapolation methods for its standardization. The radionuclide chosen as the β-γ emitting tracer nuclide was ^{60}Co because of its end-point beta-ray energy which is close as compared to ^{45}Ca.
The calibration system was composed of a 4π proportional counter operating in coincidence with a pair of NaI(Tl) crystals. The solution was obtained by means of ^{44}Ca (n,γ) ^{45}Ca reaction in a thermal neutron flux at the IPEN 2 MW research reactor.
The sources to be measured in the $4\pi\beta$-γ system were prepared by dropping known aliquots of the solutions on a 20 μgcm^{-2}thick Collodion film. Six sources were prepared using a 1:1 ratio (β-pure and β- γ) dropped directly on the Collodion film, and other two solutions of ^{45}Ca + ^{60}Co were mixed previously using a 1:1 and 1:2 ratio before making the radioactive sources. The Collodion film had been previously coated with a 10μgcm^{-2} gold layer in order turn the film conductive. A seeding agent (Cyastat SM) was used to improve the deposit uniformity; the sources were dried in a warm (45 C) nitrogen jet. The accurate source mass determination was performed using the picnometer technique. The β- γ tracer has been previously standardized by the same procedure.
The activity of the solution was determined by the extrapolation technique, using external absorbers over and under the ^{45}Ca + ^{60}C0 sources. The events were registered using a Time to Amplitude Converter (TAC) associated with a Multi-channel Analyzer. All the uncertainties involved were treated rigorously, by means of covariance analysis.

[02/09/03 - Poster]

Use of Thermal Neutrons to Perform Analyses in Body Organs of Small Sized Animals

Laura C. Oliveira, Cibele B. Zamboni, Guilherme S. Zahn, Marco A. Maschio, Marcus P. Raele

The purpose of this work was to establish the conditions for the determination of trace elements on body organs of Wistars. Usually these small-sized animals are used as guinea-pig on experiments that involves testing new medicines, medical diagnostic studies, and mainly in health area to check anomalies in body organs. The Wistar rats are usually selected as a convenient animals for these studies in function of the cost, handling and medico-legal implications. Particularly, in this work we want to determine the concentrations of Al, Br, Ca, Cl, Fe, K, Na, Mn, and Mg and Zn on biological samples of kidney, heart, muscles and spleen using the absolute neutron activation analysis technique. For this purpose, the cadmium ratio technique was used for the measurement of thermal flux distribution. In this technique, Gold foils, both bare and Cadmium covered, were irradiated together with the biological sample in the IEA-R1m nuclear reactor at IPEN/SP, and the gamma-ray activities induced in the Gold foils by both the thermal and epithermal neutrons were obtained. A Ge detector connected to ADCAM multichannel analyzer and to a PC computer was used to measure the induced gamma-ray activity. To determine the concentration of the trace elements on Wistar body organs, one animal was sacrificed and dissected. Each biological sample (kidney, heart, muscles and spleen) was calcinated, ground and homogenized and the ashes (10 mg) were then sealed into individual polyethylene bag and irradiated with thermal neutron at the IEA Nuclear Reactor. To verify the accuracy and precision of the method, the samples were prepared in duplicate. Detection limit for the all the trace elements were measured in each biological material and the results obtained indicated the viability of using this nuclear methodology for analyzing body organs.