Nuclear Analytical Techniques

APLICAÇÃO DA FLUORESCÊNCIA DE RAIOS X (WDXRFS) PARA A DETERMINAÇÃO DA ESPESSURA DE FILMES FINOS

Valdirene O. Scapin, Marcos A. Scapin, Vera L. R. Salvador, Nelson B. de Lima, Solange E. Mitani e Ricardo E. Samad

Abstract: Establishment of a method for the quantitative determination of the thickness of a thin films nickel simple on glass substrate, using the Technique of Wavelength Dispersion X ray fluorescence Spectrometry (WD-XRFS) and the Method of Fundamental Parameters. The advantages of using this technique are: precision, high sensitivity, non destructive analysis. A RIGAKU X ray fluorescence spectrometry was used, model RIX 3000, 1996 of the X ray Fluorescence Laboratory, Chemistry and Environment Center of the Instituto de Pesquisas Energéticas e Nucleares - IPEN - CNEN/SP. Films were obtained through the process of Physical Vapor Deposition (PVD) in the Thin films Laboratory, Laser and Applications Center of the Instituto de Pesquisas Energéticas e Nucleares - IPEN - CNEN/SP. Samples were analyzed with thickness between 10 - 100 nm and the results were satisfactory when compared with the technique Physical Vapor Deposition and theoretical values by mathematical expression for the calculation of thicknesses.
Keywords: thin film, X ray, WDXRF, thicknesses
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DETERMINAÇÃO DOS PARÂMETROS NUCLEARES α, f E TEMPERATURA DE NÊUTRONS NO REATOR TRIGA MARK I IPR R1.

Milton Batista Franco e Claudia de Vilhena S. Sabino

Abstract: This research intends to determine the nuclear parameters α, f and neutron temperature in several irradiations positions of the TRIGA MARK I IPR-R1 reactor, to implant the parametric method k_0 of neutrons activation analysis in the CDTN. At the time the parameters were determined at the rotatory rack, lower layer and in the central thimble: α was calculated applying the three bare monitor method using ^{197}Au, ^{94}Zr and ^{96}Zr; f determination was done according to the bare bi - isotopic method; neutron temperature was calculated through the direct method using ^{176}Lu, ^{94}Zr, ^{96}Zr and ^{197}Au and the Westcott's $g(T_n)$ function for the ^{176}Lu was calculated and the result was interpolated in the GRINTAKIS Table [6], determining the neutron temperature
Keywords: neutrons activation, parametric method, k_0
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APLICAÇÃO DA ANÁLISE POR ATIVAÇÃO COM NÊUTRONS PARA DETERMINAÇÃO DE FERRO EM FORRAGEIRAS USADAS NO SISTEMA INTENSIVO DE PRODUÇÃO DE BOVINOS DE LEITE

Maria José A. Armelin e Odo Primavesi

Abstract: Iron is an essential element to the life. It is an important hemoglobin component and it is involved in the transport of oxygen to cells. A deficiency of iron results in an unsuitable synthesis of hemoglobin and a delay in the growth. Iron contents above the tolerable level in animal feed can cause serious damages to the health and the death in extreme cases.

The forages are the main source of feed to cattle in grazing. It is known from the literature, that the growth and the nutritious value of the forage are influenced by specie and physiologic age of the plant, soil fertility and environmental conditions. Therefore, an agronomical evaluations of the forages are necessary before to introduce in an intensive cattle production systems to program adequate grazing management.

Neutron activation analysis (NAA) was applied to evaluate the Fe concentration in the main tropical forage grasses used in intensive dairy cattle production systems in São Carlos, SP, Brazil. Iron concentrations were smaller in the rain season than in the dry one. Comparison of results obtained in the analyses of forages with daily requirements of iron in dry matter, showed that the Fe concentration in forages was adequate.
Keywords: neutron activation analysis, iron, soil, forage.
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