

A ROUTINE CHEMICAL DOSIMETRIC SYSTEM USING THE MODIFIED CERIC SULPHATE DOSIMETER

Lucy K. Yamanaka and Linda V.E.Caldas (Instituto de Pesquisas Energéticas e Nucleares-CNEN/SP Caixa Postal 11049 - CEP 05422-970 - Sao Paulo, SP, BRAZIL)

The radiolytic reduction of the Ce^{4+} in a 0.8N sulfuric acid was examined, with the objective of measuring large radiation doses. The ceric sulphate dosimeter was tested in the range from 1 to 20 kGy. The 0.01 M sodium oxalate solution was chosen instead of the arsenious oxide solution (used in the conventional method), in order to obtain a less expensive dosimetric system than that normally used for routine chemical dosimetry. The absorption spectrum of the Ce^{4+} solution presents an absorption peak at 370 nm ($2.99 \times 10^4 M^{-1} cm^{-1}$); the obtained molar extinction coefficients of Ce^{4+} and Ce^{3+} were 5670 and $2.7 M^{-1} cm^{-1}$ respectively. The purpose of this work was to establish a simple, reliable and inexpensive routine chemical dosimetric system for high doses.

Work partially supported by CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico, Brazil