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Gamma Ray and Neutron Irradiation Effect on Makrofol-E Detector

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ABSTRACT :

A direct method for measuring doses of gamma radiation and neutron has been achieved through measuring the induced coloration in Makrofol-E after being exposed to pure gamma rays and gamma plus neutrons.

The charcteristic of absorption with different intensities in the photon energy range between 1.470 eV and 3.845 eV was obsereved when the samples were exposed to gamma radiation and neutrons.

An emperical formula for calculating the gamma doses for Makrofol-E in the range (227.520 - 796.320) Krad have been achieved.

INTRODUCTION :

The study of optical properties of Makrofol-E is a powerful tool to understand the amount of damage produced in materials by nuclear radiation. A lot of work have recently been done by using Makrofol-E detector as a solid state nuclear track detector[1-4]. Since the use of such detector makes some experiments possible, and widely used in a variety of experiments such as nuclear physics[5,6], fusion research[7].