

H. Bakr

Department of Physics, College of Education, University of Basrah, Basrah,

Iraq

ABSTRACT

In present work, the effect of temperature on alpha track diameter of (LR115, CN85, CR39) detectors was studied. The results for all used detectors have shown that the diameters of the tracks decrease with increasing temperature.

INTRODUCTION

Applications of solid state nuclear track detectors (SSNTD's) have increased in recent years due to their properties. They have been extensively used in nuclear physics, space physics, geology, nuclear engineering and many other fields [1-3].

It is well known that when a collimated beam of alpha particles fall on a detector surface at right angles they deposit a certain energy per unit length and leave a corresponding damage through the path in the material [3]. This happens due to the breaking of the polymer's chain that leaves free radicals through the path of the incident particles. Such places then become easy for chemical etching, leading to an etching rate (track etch rate) which is more than that at the surface (bulk etch rate) [4].

When using the above mentioned kind of detectors for the identification of particles, the knowledge of accurate relations between the annealing temperature and the tracks diameters for alpha particles in plastic material