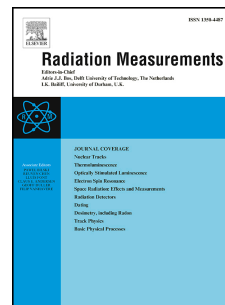


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Feasibility study on the application of solid state tracks detectors for fast surveys of residual alpha contamination in decommissioning activities

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Abstract

A feasibility study concerning the application of Poly-Allyl-Diglycol Carbonate (CR-39TM) solid state tracks detectors for fast survey of residual alpha contamination has been carried out at Casaccia Research Centre, as a joint effort from ENEA, Sogin, and Sapienza University of Rome. The main target of the activity is to develop and set up a fast and economic method for assessing the presence of residual uranium, plutonium, and/or mixed oxides (MOX) traces on walls, floor, furniture, and small objects (PC-displays, keyboards, tools, etc.) of hot laboratories under decommissioning. The key idea is using CR-39TM foils for cladding surfaces under investigation for recognizing the typical uranium and plutonium clusters originated by alpha particles interaction with CR-39TM, that are clearly distinguished from the tracks originated by radon decay products. Results of experimental tests have given a clear picture of alpha tracks clusters originated by plutonium sources, while radon decay products gave uniform alpha tracks' distribution.

Keywords: SSNTD, trans uranium clusters, PADC, decommissioning.

1. Introduction

Solid state nuclear track detectors (SSNTD), in particular CR-39TM, are widely known to be used for passive measurement of ²²²Rn (radon) exposures. As well known, alpha particles, emitted by the radon decay products (RDP), leave damage tracks in the CR-39TM material. These tracks can

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