



META

Tetraethyl ammonium bromide as new chemical etchant for alpha track detection on Cr-39 from granitic wastes

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Abstract

[en] For present investigation, CR-39 detector has been standardized and calibrated using thorium nitrate and uranyl nitrate salt solutions as a source for alpha track detection. Different effluent waste samples (G1-G15) were collected from granite and marble cutting and molding Centre of Turbhe, Mumbai. Samples were separated as solids and filtrates. Solid residues were dried in an oven for few hours and then stored in sterile plastic containers. CR-39 detector pieces were then exposed for different times to all the residue and filtrate samples for alpha track detection and measurements. Etching was carried out by employing traditional 6N NaOH etchant and newly introduced 5% Tetra Ethyl Ammonium Bromide (TEAB) with 6N NaOH etchant at 60°C for 6 h. Track density (T_d) and track diameter for all samples were measured. ^{238}U and ^{232}Th content of the samples were measured by ICP-MS. The introduction of new chemical etchant effectively improves uniformity, enhances track density and tracks formation. Therefore, it is observed that TEAB is highly effective etchant for the alpha track revelation and detection as compared to conventionally used 6 N NaOH etching method

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