Abstract:

Diallyl phthalate (DAP) resin was used as an induced-fission-track detector for dating. Characteristics of track etching in a PW solution containing KOH and water, and a PEW solution containing KOH, ethanol and water were investigated through stepwise etching experiments. It was confirmed that the detection efficiency of DAP for fission fragments was 1.04-1.05 times as much as the muscovite mica because of difference in registration thresholds between them. In the case of the etching in the PW solution, recoil tracks induced by fast neutrons in a reactor were detected in high density. The PEW solution is recommended for fission track dating because it has several advantages of disappearance of the recoil tracks, shorter etch time and high detection efficiency as well as the PW solution. Automatic counting of induced tracks etched in the PEW solution was performed by image processing with high accuracy.