Purpose: To simplify and accelerate the readout of etch-track neutron dosimeters made of poly-allyl diglycol carbonate (PADC) by automating the process of counting ion tracks caused by neutrons in the detector material.

Methods: A LabVIEW application and an ImageJ macro were developed for the analysis of images of the detector surface which were taken by a camera mounted onto a microscope. The LabVIEW application is used to control the microscope, to start the ImageJ macro and to adjust different parameters such as the format of the image to be analyzed. The ImageJ macro is used for the analysis of the images. After a background correction an edge filter is used in order to enhance the tracks. Afterwards an appropriate threshold is determined. All tracks with a certain minimum size were counted with ImageJ's Analyze Particles function. False positives due to surface defaults or other artefacts such as dust or scratches on the detectors were eliminated according to their circularity, solidity and distribution in the image. All results are saved in a log file. A warning is displayed if surface defaults are detected.

Results: The developed ImageJ macro is able to analyze most images correctly. The number of tracks (± 1) was determined correctly in 98 % of the images. Artefacts due to dust or scratches are not counted as tracks. Surface defaults are sometimes not detected which results in a higher number of tracks. In most of those cases the number of tracks and therefore the corresponding dose is still under the reporting limit.

Conclusions: The LabVIEW application and the ImageJ macro developed in this work simplify the readout of PADC etch-track neutron dosimeters. The number of correctly analyzed images is in the same range or even higher as that from a trained operator who counts the tracks manually.