CR-39 ELECTROCHEMICAL ETECHING USING PEW SOLUTION FOR THE FAST NEUTRON DETECTION.

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The electrochemical etching properties of CR-39 using PEW solution were studied. The decrease of etching time was sensible even at ambient temperature. The detector response to neutron energy was noticed to be less variable what was supposed to be due to the no pre-etch employment.

Foils of CR-39 were exposed to fast neutrons from ^{252}Cf and AmBe sources. The foils were electrochemically etched during 4 h at ambient temperature, PEW solution (15% KOH, 40% C_2H_5OH, 45% H_2O), the field strength was 30 $kVcm^{-1}$ at 2 kHz.

In order to demonstrate the effect of the etchant on sensibility the results were compared with data obtained using a 6,25 N NaOH solution with an hour pre-etch for the same irradiation conditions.

The results obtained showed an decrease in sensibility that was already expected but the no increasing lower limit of detectability, the remarkable decrease of etching time and the minor difference in the response of the detector to the neutron energy are reasons that show us that these etching conditions may be very interesting to use this detector in personnel fast neutron dosimetry.