# Neutrongraphy with Track-Etch Detectors at the IEA-R1 Nuclear Research Reactor

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An experimental arrangement installed at the Beam-Hole n. 3 of the IEA-R1 Nuclear Research Reactor of the IPEN-CNEN/SP has been used for track-etch neutrongraphies purposes, where a collimated thermal neutron beam exposure area 4 cm x 8 cm and flux at the sample $10^5$ n/s/cm$^2$ is obtained. Four distinct solid state nuclear track detectors with the same boron (n,α) converter screen were used: LR-115, CR-39, CN-85 and Makrofol-E. The technique for each detector-converter system was firstly developed and secondly the neutrongraphic results of several organic and inorganic materials were compared in terms of the following parameters: irradiation and etching times, resolution, visual contrast, detector transparency and handling facility. The results for the four detector demonstrates very similar results for irradiation and etching times (approximately 3 hours and 20minutes respectively) as well as for the resolution testes and handling facility. The CR-39 showed the best visual contrast and transparency.

Besides this intercomparison the good quality level of these neutrongraphies is confirmed by the details and defects which are visible at the detectors.