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NUCLEAR TRACK-ETCHED PORE MEMBRANE PRODUCTION USING OAEP'S RESEARCH REACTOR

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Abstract: Result of this study shows that the OAEP's nuclear research reactor is a good source of both fast and thermal neutrons for pore piercing process on polycarbonate thin film. With our experimental design, the fast neutron provides better results in pore piercing comparing with thermal neutron bombardment. This can be explained that most of the latent tracks that occur by thermal neutron bombardment do not piercing through the thin film. Chemical etching process using NaOH solution with an appropriated time, concentration and temperature was employed to enlarge the latent tracks in the bombarded film by fast neutrons. Fast neutron bombardment with 5, 10 and 20 minutes bombarding time successfully produces the nuclear track membrane. Pore size and pore density of the produced membranes examined by SEM were 0.24 – 1.01 μm and 4.67 – 245 $\times 10^6$ pore/cm², respectively. Bubble point test showed the maximum pore diameter of the produced membrane ranged between 1.18 – 3.25 μm . Water permeability was studied and compared between the produced and commercial membranes.