

RADIATION GRAFTING OF ACRYLIC ACID AND ACRYLAMIDE
TO POLYETHYLENE

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Radiation methods are particularly suited for the production of a large variety of graft copolymers with interesting properties. The preparation of hydrophilic surfaces by radiation grafting of different hydrosoluble monomers into polyethylene (PE) was studied in this work.

A certain amount of acrylic acid (AAc) or acrylamide (AAM) were put into a glass ampoule, respectively, with PE films and PE tubes, using water as solvent and cupric ions as homopolymerization inhibitors. Through the simultaneous irradiation method, the samples were submitted to gamma rays of a ^{60}Co source, at a total dose ranging from 4 to 42 kGy, in O_2 absence (dose rate 0.25 - 2.3 kGy/h). The homopolymer extraction was carried out in boiling water for 8 hours.

The grafting degree of both monomers on PE increased with the monomer concentration. The higher monomer concentration used was 50% for AAc and 30% for AAM, which achieved the grafting degree of 154% and 65%, respectively. The hydrogels PE-g-AAc (film) e PE-g-AAM (tube) attained 30% and 6.5%, of water content after being immersed in distilled water until the equilibrium have been reached (24 hours in most cases).

The good swelling behavior of the grafted PE films and tubes make them acceptable for practical use as biomaterial.

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