

Abstract : The charge decay in isotactic polypropylene (iXPP) films of 50 μ m thickness, containing three kinds of additives, namely a trisamide, a bisamide and a fluorinated compound, with concentrations in the range 0.004-1 wt% was studied. Compression molding was used to produce the films. The samples were either surface-charged by a corona method or volume-charged by mono-energetic electron beams of different energies, having penetration depths up to 6 μ m. In all cases, surface potentials of about 200 V were chosen. After charging the films, the decay of the surface potential was studied either by an isothermal discharge method at 90 $^{\circ}$ C or by thermally stimulated discharge measurements. The results show a dependence of the decay rate on the kind of additive used, on additive concentration and on the energy of the injected charges. In particular, for samples with fluorinated additives, the stability of the surface potential decreases markedly with increasing electron energy, while such a dependence is very weak for samples containing the bisamide additive and does not exist at all for samples with the trisamide additive. These observations are tentatively explained by the radiation-induced generation of relatively mobile negative ions originating from the bisamide and fluorinated additives.