

**Abstract :** The electret properties of virgin cellular polypropylene (PP) films and chemically modified cellular PP films by extraction from  $\text{CH}_2\text{Cl}_2$  solution, oxidation in a mixture solution of  $\text{H}_2\text{SO}_4$ ,  $\text{CrO}_3$  and  $\text{H}_2\text{O}$  and fluorination in a hydrofluoric acid (HF) solution, were systematically studied by measuring the open-circuit thermally stimulated discharge (TSD) current spectra, charge TSD spectra and isothermal charge decay. The results point out that there are more deep traps than shallow traps in the surface region while the contrary case occurs in the bulk region. The thermal stability of charge storage of the chemically modified cellular PP film is significantly improved in comparison with that of the virgin one. Light irradiation or reacting at elevated temperature has remarkable promotion effect on the reaction of HF with the extracted and oxidized film. Moreover, a method for investigating the dynamic changes of mean charge depth relative to its initial value during heating was proposed.