

## Thermal Stability of Phosphorus flame retardants having different Molecular Weight

함석민<sup>1,2</sup>, 김진환<sup>2,\*</sup>

<sup>1</sup>호남석유화학; <sup>2</sup>성균관대학교

(jhkim@skku.edu\*)

Organophosphorus compounds have been used as additive type-flame retardant for thermoplastics, thermosets, textiles, paper, coatings, and mastics. The flame retardant of high molecular weight and less reactive with the base resins should be developed. Derivatives of phosphonic acid having controlled molecular weight were synthesized and Resorcinol bis (diphenyl phosphate) derivatives having different molecular weight were obtained. The relationship between molecular weight of phosphorus flame retardant and thermal properties were investigated. The thermal degradation of polyphenyl phosphonic acid was proceeded by end-initiated chain scission, whereas polymethyl phosphonic acid was initiated by random chain scission which is found in general polymers. In case of derivatives having phenyl groups, as the molecular weight was increased, thermal property was more stable but water solubility could not controlled. And the relationship between Molecular Weight of Phosphorus flame retardant and its flame retardancy based on ABS is also discussed.