

## Effects of Nano-sized Core-shell Rubber (CSR) Particles on Impact Peel Strength of Epoxy Systems at Low Temperature

채현희, 최영선\*, 이정래, 김효민  
부산대학교

(choe@pusan.ac.kr\*)

Many efforts have been made to improve the mechanical properties of epoxy-based electronic packaging materials at low temperature. glass transition temperature ( $T_g$ ), coefficient of thermal expansion (CTE), adhesion strength and water absorption also are key factors to be considered in electronic by introducing nano-sized core shell rubber (CSR) particles (about 150–200nm in diameter) into epoxy systems have been attempted to obtain the improved mechanical properties. Various methods to disperse CSR particles into epoxy systems were introduced. By incorporating CSR particles into epoxy systems, adhesion strength (T-peel strength) and impact peel strength at low temperature ( $-40^{\circ}\text{C}$ ) significantly increased while high  $T_g$  of epoxy systems maintained almost constant. Furthermore, amine terminated-epoxy was synthesized and used to improve wetting properties at the substrate surface. CTE of CSR/epoxy systems, measured by thermomechanical analysis (TMA), was slightly affected by the CSR contents in epoxy systems in this study.