

## Mechanical properties of ABS/PLA composites

**Jin San Yoon**  
Inha University, Korea

Acrylonitrile-butadiene-styrene copolymer (ABS) is frequently used for the automobile interior parts due to its excellent impact strength in combination with good balance of other requisite properties. Replacement of part of ABS with PLA may reduce the consumption of petroleum-based resources and thereby enhance the eco-friendliness of the material. However, impact strength and heat distortion temperature of PLA lie far below the corresponding values needed for practical applications. It is certain that a complete prevention of the deterioration of the material properties of ABS as a result of the incorporation of PLA is unavoidable. However, since the material properties of ABS are far superior to those required for many car interior parts, ABS/PLA composites can be used for the same purpose instead of ABS alone, if the material properties meet the target values. For example, the impact strength of ABS with butadiene content of 25wt% is as high as 480 J/m, while 80 J/m of impact strength is enough for car console boxes which are usually made of ABS. In this study, ABS/PLA composites were prepared in order for auto-interior matters by way of PLA toughening and interfacial adhesion improvement through proper selection of heat stabilizers and compatibilizers.

Both tensile and flexural strength, flexural modulus and impact strength went up as the content of SAN-GMA increased, and thereby ABS (BD28)50/PLA50 incorporated with 20 phr of SAN-GMA met all the target properties to be used as car console boxes. Incorporation of Songsorb in the range of 0.0~1.0 phr did not affected the tensile strength, flexural strength and flexural modulus, but raised the impact strength up to 158 J/m, indicating Songsorb was effective for the enhancement of the impact strength.

## Biography

Jin San Yoon has completed his Ph.D from Compiegne University, France. He has been a professor at Inha University, Korea, since 1981.

[jsyoon@inha.ac.kr](mailto:jsyoon@inha.ac.kr)