

Development of New Painting Technology for Automobile Parts Using Plasma Surface Treatment

*C.-K. Jung, S.-H. Cho, I.-S. Bae, J.-S. Jung, S.-B. Lee, J.-H. Boo

Department of Chemistry and Institute of Basic Science, Sungkyunkwan University, Suwon
440-746, Korea

*e-mail : ckjung7818@korea.com

One of the major areas in organic coatings for corrosion protection of automobile parts is the surface treatment of polyolefin substrates. In the automobile industry a complex and critical process is used in order to enhance both wettability and adhesive properties of polyolefin bumper surfaces. Microwave plasma treatment represents an efficient, clean and economic alternative to activate polymeric surfaces. O₂ plasma treatment at 295 K within 5 min. in the power range of 300 ~ 1000 W were used to elevate hydrophilic property of the polyolefin substrates. A wettability and adhesion properties change appeared with O₂ plasma treatment conditions. Wettability and adhesion properties were elevated by the measurement of the contact angle, adhesion test, impact test, cold resistant impact test and water resistant impact test. We confirmed that the plasma treatment was very reliable method for the synthesis of polyolefin substrates with high wettability and adhesion performance.