

Experimental Verification of Various CFRP surface Treatment for Automotive Application

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In the global automobile industry, the importance of fuel efficiency improvement technology is increasingly emerging in order to control greenhouse gas emissions, strengthen environmental regulations, and respond to automobile fuel economy regulations. Carbon fiber reinforced plastic (CFRP) is currently used as a lightweight material in various parts of automobiles. However, fiber reinforced plastic (FRP) material may be damaged at the time of joining via mechanical bonding; therefore, adhesion is important. When bonding is conducted without surface CFRP treatment, interfacial destruction occurs during which the adhesive falls off along with the CFRP. Mechanical strength and fracture shape were investigated depending on the surface treatment (pristine, plasma treatment times, and plasma treatment times plus epoxy modified primer coating). The plasma treatment effect was verified using the contact angle and X-ray photoelectron spectroscopy. The wettability of the epoxy modified primer (EMP) coating was confirmed through surface morphology analysis, followed by observation of mechanical properties and fracture shape.