Short Communication

Galvanic Corrosion Behavior of Aluminum Alloy (2219 and ZL205A) Coupled to Carbon Fiber-Reinforced Epoxy Composites

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The galvanic corrosion behaviors between carbon fiber-reinforced epoxy composites (CFREC) and aluminum alloy (2219 and ZL205A) in 3.5 wt.% sodium chloride solutions were evaluated by laboratory electrochemical measurement. The corrosion morphology, products and galvanic currents of galvanic couples were measured. The results indicate that there were serious galvanic corrosion when these two kinds of materials were coupled for 10 hours in 3.5wt.% NaCl solution, corrosion pits and grooves can be clearly observed on both aluminum alloys; the galvanic current of 2219 is slightly higher than that of ZL205A which both decrease with time; the average galvanic current density of 2219 and ZL205A is $20.19\mu\text{A}\cdot\text{cm}^{-2}$ and $16.08\mu\text{A}\cdot\text{cm}^{-2}$ respectively; as a result, two types of aluminum alloys are not allowed to contact with CFREC directly in hygrothermal salt spray environment.

Keywords: galvanic corrosion, carbon fiber-reinforced epoxy composites, aluminum alloy

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