

## Corrosion Behavior of the Al<sub>2</sub>Cu Intermetallic Compound and Coupled Al<sub>2</sub>Cu/Al

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The corrosion behavior of intermetallic Al<sub>2</sub>Cu has been investigated using polarization, electrochemical impedance spectroscopy (EIS), scanning kelvin probe (SKP), local electrochemical impedance (LEIS) and scanning electron microscopy. The corrosion potential of intermetallic Al<sub>2</sub>Cu is measured to be -473.04 mV in 0.1 M Na<sub>2</sub>SO<sub>4</sub> solution with pH 4.3. The highest corrosion rate over the immersing time between 0 and 96 h is observed at 48 h according to the EIS results. The potential results of coupled Al<sub>2</sub>Cu/Al reveal that the Al<sub>2</sub>Cu potential becomes positive during the immersion time and is higher than that of pure Al near the interface. The local impedance value of intermetallic Al<sub>2</sub>Cu increases greatly and is higher than that of pure Al. Thus, the corrosion degree of pure Al is more severe than that of intermetallic Al<sub>2</sub>Cu because of the galvanic corrosion of coupled Al<sub>2</sub>Cu/Al.

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**Keywords:** intermetallic Al<sub>2</sub>Cu; corrosion behavior; EIS; SKP; LEIS

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