Corrosion behavior of PCB-ENIG in a simulated marine atmospheric environment with industrial pollution

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In this work, the corrosion behavior of printed circuit board finished with electroless nickel immersion gold (PCB-ENIG) in a simulated marine atmospheric environment with industrial pollution is studied through corrosion topography observation, electrochemical measurement and surface Kelvin potential analysis. The results show that at the initial stage, micropores corrosion is the main damage formation for PCN-ENIG. However, the initial corrosion products accumulate on the sample surface and block the micropores, restrict the infiltration process of chloride ions and hydrogen ions. Therefore, the surface Kelvin potential and electron transfer resistance increase at initial stage. As the extending of exposure time, some localized corrosion products shed off due to the crack initiation, resulting in the direct exposure of substrate Cu to the acid salt spray environment. Consequently, the coating loses the protection effects on Cu.

Keywords: PCB-ENIG, Micropores corrosion, Marine atmospheric environment, Industrial pollution, Surface Kelvin potential

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