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Effects of silica and Ag on the electrochemical behavior of titania-based nanocomposite coatings deposited on 2024 aluminum alloy by the sol-gel method

A. Shanaghi, H. Nonahal, Paul K. Chu



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High lights

Titania- silica- Ag nanocomposite coating was improved corrosion resistance of Al 2024-T4 by forming homogenous and compact protective layer. The adhesion strength and thickness of the coatings increase from 23 to 28 mN and 516 to 547 nm, respectively, when silica is added. The presence of calcium and potassium ions led to smaller release of aluminum ions in Ringer's solution, about 0.0036 mg/l-cm^2 from the titania-silica-Ag coating. Titania- silica- Ag can be improving the service lifetime and effectiveness of Al 2024-T4 in medical applications.

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