37－32　Insertion of SiO_2 nanoparticles into pores of anodized aluminum by electrophoretic deposition in aqueous system

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The fixation of SiO_2 nanoparticles into nanopores arrays of an anodized aluminum (Al_2O_3/Al) substrate was carried out using a sol-gel electrophoretic deposition technique in an aqueous SiO_2 sol. Nanosized SiO_2 particles can be easily incorporated into the pores of anodized aluminum prepared in a H_3PO_4 solution, but not into the pores prepared in a H_2SO_4 solution because of the difference in the pore diameters. It was confirmed that the particles in suspension were incorporated without applying an electric field. This result was due to the dissimilarity in the surface charges of the particles and anodic oxide film.

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