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Abstract

Plasma electrolytic oxidation (PEO) is an attractive technology for improving resistance to wear, heat and corrosion of aluminum alloys. PEO results in a hard, well-adhered alumina ceramic coating with a morphology which is graded from a dense region near the substrate interface to a porous outer region. Such properties mean that PEO can be an ideal underlying layer for the application of solid lubricants which can be entrapped in outer pores and provide reservoirs for the tribological contact lubrication. This study investigates the fretting wear behavior and adaptive mechanisms for a PEO-produced alumina surface of about 11-12 GPa hardness with a top layer of an $MoS_2/Sb_2O_3/C$ chameleon solid lubricating coating, the