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Abstract

Fretting fatigue initiation behavior in Ti–6Al–4V dovetail assemblies are investigated by the combining applications of experimental and theoretical methods. The evolution of fretting regime, fretting wear mechanism and fretting crack initiation behavior in as-received and shot-peened samples are developed and comparatively evaluated. The effect of shot-peening on crack initiation orientation is elucidated through an analytical approach using fracture mechanic concepts. The results highlight that shot-peening not only changes the fretting wear mechanism and crack initiation angle, but also reduces the crack number and prevents the crack propagation in Ti–6Al–4V dovetail joint specimens.

Keywords: Shot-peening; Ti-6Al-4V; Dovetail joint; Fretting wear; Crack initiation