**Microscopic study of 5083-H321 aluminium alloy under fretting fatigue condition**


ABSTRACT

Fretting occurs where there is small amplitude oscillating motion between solid surfaces in contact. With even small loads or prolonged operation, fretting may lead to crack initiation followed by fretting fatigue. Its effect on fatigue is to speed up the nucleation of fatigue surface cracks and it can be extremely damaging. Fretting fatigue is a critical concern in aircraft structures and a widespread problem in naval structural components and is often the root cause of fatigue crack nucleation in machine components. In this investigation, fretting fatigue study is carried out using 5083-H321 marine/ aerospace aluminium alloy. The test rig and the experiments were designed with an emphasis to study the crack initiation behaviour in the fretted region using scanning electron microscope (SEM). Fretting damage and its relationship to the fretting fatigue life are presented and discussed.



**Keyword:** Fretting; Fretting fatigues