

Comparative Study of Different Materials under Fatigue Load at Different Test Conditions

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Abstract

In this paper, fatigue life experiments were performed at room temperature and after heat treatment to investigate the fatigue life of stainless steel under different loading conditions. The results show that fatigue life of stainless steel at room temperature is found higher than the life obtained by heat treated specimen. So, in this experiment mild steel is used to determine fatigue life at various loading conditions. Numerical simulation also performed by FEM (Finite Element Method) using ANSYS 14.5. In simulation, reversed bending loading mode was used to investigate the fatigue life of mild steel. Experimental results are found in a good agreement with the numerical results. Morphological analysis of fatigue fracture by Scanning Electron Microscope (SEM) was employed to examine the fracture feature for stainless steel.

Keywords: FEM, ANSYS 14.5, morphological analysis, SEM, heat treatment