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金属疲劳扩展区和瞬断区的物理数学模型

钟群鹏, 张峥, 武淮生, 左尚志

北京航空航天大学材料科学与工程系 北京 100083

PHYSICAL AND MATHEMATICAL MODELS OF FATIGUE PROPAGATION AND FINAL RUPTURE REGIONS FOR METALLIC MATERIALS

ZHONG Qun-peng, ZHANG Zheng, WU Huai-sheng, ZUO Shang-zhi

Department of Materials Science and Engineering, Beijing University of Aeronautics and Astronautics, Beijing 100083, China)

摘要 以金属的疲劳扩展区和瞬断区为对象,讨论了应力变化幅度与裂纹临界长度、疲劳寿命和临界裂纹长度的数学模型;分析了疲劳瞬断区上放射线的物理数学模型,探讨了疲劳瞬断的性质和控制参量以及疲劳瞬断区的对称性,得到了一些颇有启发性的结果,为金属材料的疲劳宏观断口定量分析提供了有价值的思路

关键词： 金属 疲劳扩展区 疲劳瞬断区 物理数学模型

Abstract： The fatigue propagation and final rupture regions in metallic material are investigated. The mathematical models between stress change range and critical flaw length, fatigue life-span and critical flaw length are discussed. The physical and mathematical model of radiate rays on fatigue final rupture regions is analyzed. The characters and controlling factor of fatigue final rupture and symmetry nature of the final rupture region are researched. Some active results are obtained. The foundation of fatigue macrofractography quantitative analysis for metallic materials is provided.

Keywords： metallic material fat igue p ropagat ion region fat igue final rup ture region physical andmathemat icalmodels

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