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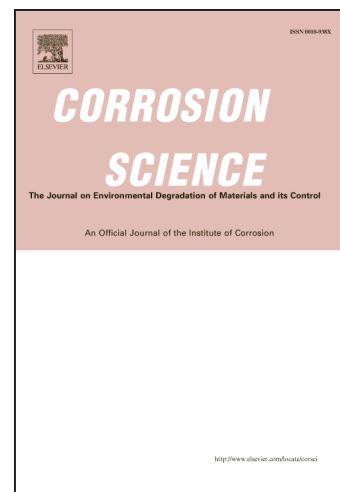
Corrosion Fatigue Crack Growth Behavior of Oil-Grade Nickel-Base Alloy 718.  
Part 1: Effect of Corrosive Environment

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## Corrosion Fatigue Crack Growth Behavior of Oil-Grade Nickel-Base Alloy

### 718. Part 1: Effect of Corrosive Environment

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#### Abstract:

The effect of corrosive environment on corrosion fatigue crack growth (CFCG) behavior of oil-grade nickel-base alloy 718 is studied. The results demonstrate that there is no obvious effect of 3.5 wt.% NaCl solution at RT, 50°C and 80°C on CGCG rates while 21 wt.% NaCl solution at 80°C produces a deleterious effect on CFCG rates compared to the ones tested in air. Potentiodynamic polarization results show that alloy 718 exhibits passive behavior in 3.5 wt.% NaCl solution, while pitting corrosion resistance decreases with increasing solution temperature. Nevertheless, alloy 718 shows active corrosion behavior in 21 wt.% NaCl solution at 80°C.

**Keywords:** A. Superalloys, B. Polarization, B. SEM, C. Pitting Corrosion, C. Corrosion fatigue

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