compared with inorganic glasses and polymers. By using the values of tearing energy, the ideal yield stress for various amorphous metals was estimated to be about two times the nominal yield stress, possibly because stress concentration at defects preexisted in the specimens.

**Fatigue Fracture of Amorphous Pd-20at.%Si Alloy**

T. OGURA, T. MASUMOTO and K. FUKUSHIMA

Scripta Met., **9** (1975), 109.

To obtain a general information about fatigue properties of amorphous metals, the S-N characteristics and fracture process have been examined by using the amorphous Pd-Si alloy. The amorphous metal suffers fatigue fracture and exhibits the S-N curve having a distinct fatigue limit. The macro- and micro-scopic features of fracture surface and the behavior of fatigue crack growth are similar for common ductile materials.

**Propagation of Fatigue Cracks in Amorphous Metals**

T. OGURA, K. FUKUSHIMA and T. MASUMOTO

Scripta Met., **9** (1975), 979.

The properties of propagation of fatigue cracks in amorphous Pd-Si alloy have been examined with a view to clarifying the mechanism of dynamic fracture in amorphous materials. It was observed that both the plastic deformation near a fatigue crack and propagation of the crack are controlled by the stress intensity factor near the tip of the crack, and that the propagation of a crack in the amorphous metal strictly obeys the law which is theoretically derived. This may be due to the fact that amorphous metals are structurally simple and homogeneous, and moreover is a nearly ideal elastic and perfectly plastic solid.

**Corroison Resistivity of Amorphous Iron Alloys Containing Chromium**

Masaaki NAKA, Koji HASHIMOTO and Tsuyoshi MASUMOTO

J. Japan Inst. Metals, **38** (1975), 835.

In order to evaluate the corrosion resistivity of amorphous iron alloys which have been characterized by outstanding mechanical properties, immersion tests and electrochemical measurements of the amorphous alloys were carried out in acidic and neutral solutions. In a 1 N NaCl solution at 30°C, 0.01–1 N HCl solutions at 30°C and in 10% $FeCl_3 \cdot 6H_2O$ solutions at 40 and 60°C, pitting corrosion did not occur on the amorphous Fe-Cr-P-C and Fe-Cr-Ni-P-C alloys and the weight change of the alloys containing 8 at% or more Cr was not detected by a microbalance after immersing for 168 hr. The critical potential for pitting did not appear on polarization curves of the amorphous alloys and the anodic current higher than $10^{-7}$A/cm$^2$ was not observed over the potential range 0 to 0.5 V (SCE) in 1 N NaCl and 0 to 0.9 V (SCE) in 1 M $H_2SO_4$ by the potentiostatic anodic polarization of the alloys containing 8 at% or more Cr. The extremely high corrosion resistivity of