XPS and Electrochemical Studies of Effects of Metalloid Additives on Corrosion Behaviors of Amorphous Iron-Chromium Alloys

accompaning intergranular fracture is similar to that observed in α brass polycrystals.

(2) The transition from transgranular to intergranular fracture starts at about 470 K and again a transgranular fracture appears at about 770 K: i.e., the intergranular fracture occurs in the temperature range of 470 to 770 K. It is note worthy that the lower transition temperature (470 K) corresponds to the onset of the inverse temperature dependence of yield stress. Also, the temperature at which the minimum value of ductility reveals coincides with that at which a peak in the yield stress appears.

(3) Though the intercrystalline fracture accompanies the separation at the grain boundary plane macroscopically, it is a ductile fracture in the neighbourhood of grain boundary microscopically. Thus, apparent intergranular fracture seems to be caused by the coalescence of micro cleavage cracks along {111} planes, which are induced by the stress concentration due to dislocation pile-ups.

(4) From those observations mentioned above, it is clear that the dynamic strain aging behaviour plays an important role in the intergranular fracture of α brass bicrystals.

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Boshoku Gijutsu (Corros. Eng.), **27** (1978), 279.

XPS and electrochemical methods have been used to investigate the influences of metalloid additives, phosphorus, carbon, boron and silicon on corrosion behaviors of amorphous iron-chromium alloys. It was found that phosphorus accelerates active dissolution prior to passivation. This leads to the rapid enrichment of trivalent chromium in the surface film and to the rapid formation of the surface film with a good protective quality. On the contrary, silicon and boron do not facilitate active dissolution and interfere the chromium enrichment in the surface film owing to incorporation of silicate and borate in the surface film.

Application Examples of Semiquantitative X-Ray Photoelectron Spectroscopic Analysis

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Bunseki Kagaku (Jpn. Analyst), **27** (1978), T5.

Semiquantitative analytical applciation of X-ray photoelectron spectroscopy has been investigated. The estimation of a layer composition under surface as well as a surface layer composition is described for nickel-copper alloys. The possible utilities of the X-ray photoelectron technique to the study of precipitation phenomena are also explored, which include the coprecipitation of lead sulfate with barium sulfate and the post precipitation of zinc sulfide on the surface of copper sulfide.