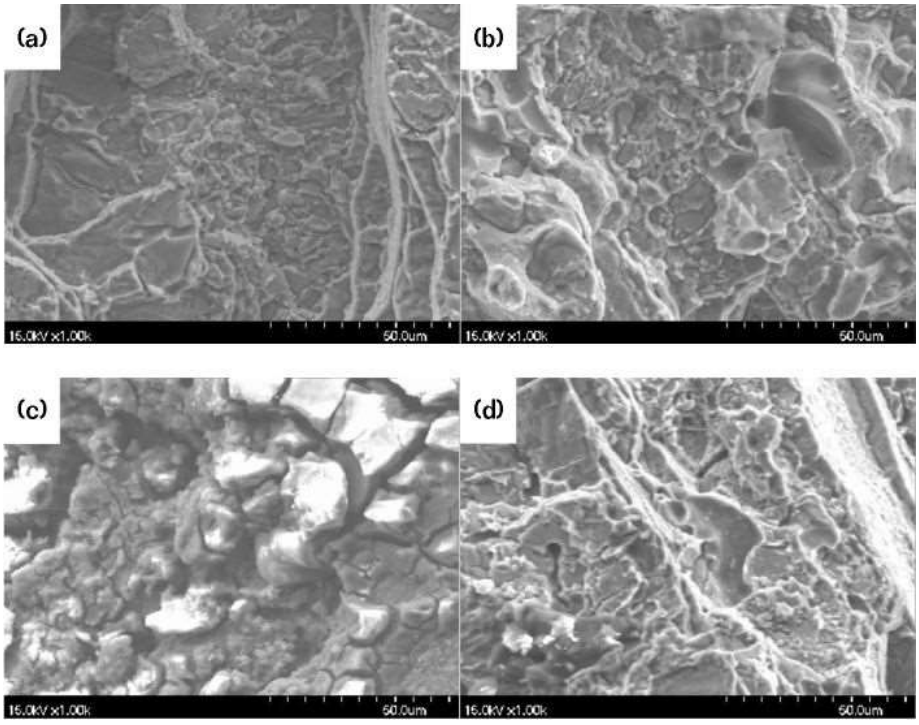

FIGURE 2 Fracture surface morphologies of the specimens tested in air (a) 15 h; (b) 30 h in 3.5% NaCl solution; (c) 15 h; and (d) 30 h.

state, the uniformly dispersed η′ phase and a small bit of η phase ($MgZn_2$) have been formed in the matrix. At this time, the matrix structure is dominated by the semi-coherent or noncoherent precipitation phase, which can reduce the aggregation of hydrogen atoms near the grain boundary in the matrix, thus improving the anti-stress corrosion performance of the alloy.[12]

Fracture Surface Morphologies

Figure 2 shows the fracture surface morphologies of the specimens under double peaks aging conditions tested in air and 3.5% NaCl solution. It can be seen from Figure 2 that the fracture of the specimens tested in 3.5% NaCl solution showed obvious embrittlement tendency and the deformation capacity obviously decreased compared with that of the specimens tested in air. In terms of morphology, the SCC fracture surfaces were both transgranular and intergranular. With prolonging the aging time, the proportion of intergranular fracture became less and less, and the dimples changed from small and shallow into large and deep.[12] The macroscopic expression is the increase of deformation, which is the embodiment of good plasticity.

Conclusions

1. There are two aging hardening peaks during the two-stage aging process of AA7075.
2. The SCC susceptibility of the second peaking was much lower than that of the first peak aging, although the strengths of both peaks were almost the same.

Acknowledgments

The financial support of the National Natural Science Foundation of China under grant No. 51871031 and the Priority Academic Program Development of Jiangsu Higher Education Institutions (PAPD) are gratefully acknowledged.

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