

possible nucleation of aluminum by TiC and the subsequent more direct experimental evidence of Cissé *et al.*¹⁰

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Discussion of "Effect of Retrogression and Reaging Treatments on the Microstructure of Al-7075-T651"*

DANH NGUYEN, KRISHNA RAJAN,
and W. WALLACE

Recently Park and Ardell¹ (P-A) have made a study on retrogression and reaging (RRA) in 7075 aluminum. The conclusions of their work are in general agreement with our earlier studies.^{2,3} The purpose of this communication is to elaborate on a few points made by P-A, especially in the context of the comparison between their results and ours.

1. We suggested the GP zone dissolution may be responsible for the drop in yield strength that accompanied the initial stages of retrogression, while P-A attributed this to η' dissolution. Our conclusion was based partly on our own observations as well as on the studies made by others. In an earlier paper² we showed evidence of strain contrast images associated with ordered GP zones in the T6 condition. In a later paper³ we had pointed out that the η' solvus is approximately 250 °C,⁴ and that the available experimental evi-

dence gives a GP zone solvus between 130 °C to 160 °C.^{4,5,6} In our studies^{2,3,7} retrogression temperatures ranged from 160 °C to 220 °C. Thus our suggestion that GP zone dissolution and not η' dissolution is primarily responsible for the initial drop in strength is quite reasonable. It may be added that more recent studies of RRA by other workers support our conclusions.⁸

2. In our study³ we felt that η' may be the primary contribution to strengthening. In both our work and that of P-A, only selected area diffraction was used to identify precipitates. The small separation of η' and η reflections makes it difficult to distinguish between the two phases and therefore it is not clear which phases contribute to strengthening. A more complete answer to this can be realized by using microdiffraction and convergent beam diffraction techniques for phase identification.

3. In reference to the effect of heat treatment on grain boundary precipitate size, P-A noted that the precipitate size in Table III of Rajan *et al.*² was a factor 100 too large. The numbers as listed in Reference 2 were a misprint which in fact was corrected in a later issue of the *J. Materials Science*. A comparison of the correct precipitate size from our work with that of P-A indicates very similar results. We had noted that the large grain boundary precipitate sizes (≥ 30 nm) gave better SCC resistance than smaller precipitates.² The results in Table II of P-A show that both the T7 and RRA material (which have better SCC resistance than T6) have precipitate sizes greater than 30 nm while the T6 material has a grain boundary precipitate size less than 30 nm.

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DANH NGUYEN, formerly with the Department of Metallurgical Engineering and Materials Science, Carnegie-Mellon University, Pittsburgh, PA, is now with Center for Technology, Kaiser Aluminum and Chemical Corporation, Pleasanton, CA. KRISHNA RAJAN, Division of Microstructural Sciences, and W. WALLACE are with National Research Council Canada, Ottawa, ON K1A 0R6, Canada.

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