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RETRACTED - Effect of Ta addition on microstructure and mechanical properties of dual two-phase Ni_3Al-Ni_3V intermetallic alloy — **CORRIGENDUM**

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Due to a technical error in the original publication of Ioroi et al.,[1] the captions of figures 5 & 6 were misplaced, causing the first paragraph of the Discussion section to be illegible. The full text of the first paragraph of the Discussion section is reproduced below, and the figures and captions are presented together as originally intended.

DISCUSSION

The 2Ta(Al) alloy exhibited the microstructure with more cuboidal and finer Ni_3Al precipitates than the other alloys. Recent study on the γ-γ ' type superalloy showed that the morphology of the γ' precipitates became large and rounded when aging is performed at high temperatures after solid solution treatment and became fine and cuboidal when aging is performed at low temperatures [7]. The results were explained by energetic consideration: the morphology of the precipitates grown at high temperatures is governed by the 'surface energy' of the precipitate while those grown at low temperatures is governed by the 'elastic energy' involving the elastic strain energy due to the lattice mismatch between the precipitate and matrix and the elastic strain interaction energy between precipitates. The elastic energy is characterized by taking a negative minimum if the precipitates form cuboidal shape and are adjacent to each other along <100> direction [8,9]. It is widely recognized that the morphology of the individual precipitate is determined by minimizing the sum of the surface energy and elastic energy [10,11]. As a measure to predict which of the energy terms dominates in the present alloys, the solvus temperatures, T_s, at which the γ ' phase begins to precipitate during cooling after solid solution treatment were estimated from the phase diagrams of the Ni-Al-V ternary and Ni-Al-V-Ta quaternary alloys [1]. It was shown that the solvus temperature was lower for the 2Ta(Al) alloy than for the 2Ta(Ni) and 2Ta(V) alloys. Accordingly, it is suggested that the precipitation behavior in the 2Ta(Al) alloy is dominated by the elastic energy, resulting in fine and cuboidal precipitates aligned along <001> direction while that in the 2Ta(Ni) and 2Ta(V) alloys is dominated by the surface energy, resulting in large and rounded precipitates.

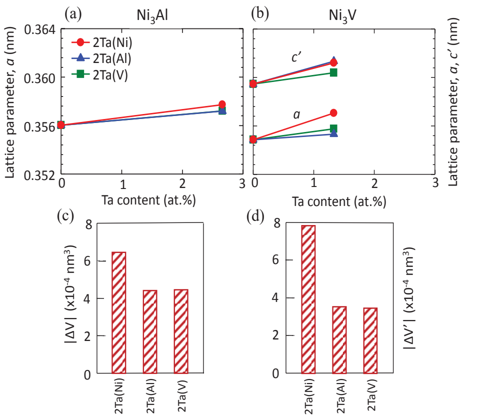

Figure 5. Changes of the (a,b) lattice parameters and (c,d) unit cell volumes in the (a,c) Ni_3Al and (b,d) Ni_3V phases for the alloys added with 2 at.% Ta.

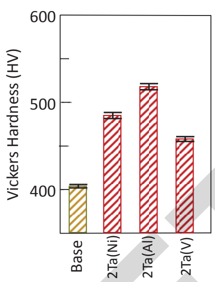

Figure 6. Vickers hardness of the prepared alloys solution-treated at 1553 K for 5 h.

REFERENCE

1. K. Ioroi, Y. Kaneno, and T. Takasugi, MRS Advances **4**, 1509 (2019).