Response to Reviewer 1 Comments

Thanks for your time, and we did following changes on our script according to your feedback:

**Point 1:** Introduction can be improved

**Response 1:**

We added 4 citation in INTRODUCTION section, these articles focus on deformation mechanism of two phase Ti-Al alloy, ranging from 1980 to 2017.

1. Sastry, S.M.L.; Lipsitt, H.A. Plastic deformation of TiAl and Ti3Al. Proceedings of the 4th International Conference on Titanium, 1980, pp. 1231–1243.
2. Farenc, S.; Coujou, A.; Couret, A. An in situ study of twin propagation in TiAl. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties 1993, 67, 127–142. doi:10.1080/01418619308207147.
3. Appel, F.; Wagner, R. Microstructure and deformation of two-phase g-titanium aluminides. Materials Science and Engineering R: Reports 1998, 22, 187–268. doi:10.1016/S0927-796X(97)00018-1.
4. Hempel, N.; Bunn, J.R.; Nitschke-Pagel, T.; Payzant, E.A.; Dilger, K. Study on the residual stress relaxation in girth-welded steel pipes under bending load using diffraction methods. Materials Science and Engineering A 2017, 688, 289–300. doi:10.1016/j.msea.2017.02.005.

**Point 2:** Research design can be improved

**Response 2:**

**Model Verification**(subsection 2.4) was added into MOLECULAR DYANMICS SIMULATION (section 2). In order to check the accuracy of potential and other simulation parameters, we designed a simplified verifying model, and compared the results with published literature:

1. Chen, J.H.; Cao, R. Chapter 9 - Brittle Fracture of TiAl Alloys and NiTi Memory Alloys. In Micromechanism of Cleavage Fracture of Metals; Chen, J.H.; Cao, R., Eds.; Butterworth-Heinemann: Boston, 2015; pp. 365–443.doi:https://doi.org/10.1016/B978-0-12-800765-5.00009-5.
2. 32. Tang, T.; Kim, S.; Horstemeyer, M.F. Molecular dynamics simulations of void growth and coalescence in single crystal magnesium. Acta materialia 2010, 58, 4742–4759. doi:10.1016/j.actamat.2010.05.011

**Point 3:** Methods description can be improved

**Response 3:**

Detailed description about the selection of strain rate was added in MOLECULAR DYNAMICS SIMULATION(section2). We choose strain rate of 5e8/s-1 according to published work:

1. Brimmo, A.T.; Hassan, M.I.; Shatilla, Y. Transient heat transfer computational model for the stopped aluminium reduction pot - Cooling techniques evaluation. Applied Thermal Engineering 2014, 73, 114–125.doi:10.1016/j.jmst.2015.12.001.
2. Zhu, T.; Li, J.; Samanta, A.; Leach, A.; Gall, K. Temperature and strain-rate dependence of surfacedislocation nucleation. Physical Review Letters 2008, 100, 025502. doi:10.1103/PhysRevLett.100.025502.

**Point 4:** Results presentation can be improved

**Response 4:**

Discussion about elastic deformation was added to the RESULTS AND DISCUSSION(section 4).

**Point 5:** Conclusion can be improved

**Response 5:**

We add a point conclusion in section:Deformation behavior of two types of grain inside two phase Ti-Al alloy are different due to their crystal structure. Ti3Al grain is easy to be deformed during elastic stage.