The martensitic transformation and mechanical properties of Ti6Al4V prepared via selective laser melting
Authors: Junjie He, Duosheng Li et al.

The article describes the mechanism of martensitic transformation that occurs during SLM process of Ti6Al4V alloy and its influence on the microstructure and tensile properties of as-built and annealing samples. The manuscript is quite well written, however, aspects of microstructure and martensitic transformation during SLM are well known and described in the literature. Also, the process parameters are common, especially the laser power. Below, there are detailed comments that have to be answered and corrected prior to publishing.

Detailed comments:
1) What is the total porosity and oxygen content of the as-built specimens?
2) How did you measure the E modulus? Was an extensometer during tensile testing used?
3) What do you mean thermo-hysteresis? Is it thermal hysteresis?
4) Fig. 3b can be removed.
5) Each parameter: UTS, YS, E and HV should have an average value and standard deviation.
6) The plasticity of stress-relieving specimens significantly improved (from 2.9% to 5%), however this is far below 10% according to the requirements of the ASTM F 3001-14 and ISO 5832 standards. The ductility problem of the SLM samples obtained at this work should be discussed.
7) Quantitative phase composition (in %) of both as-built and stress relieving samples should be calculated and presented.
8) Point in Fig. 6 where the twin lamellar glutted with dislocation lines are.
9) The TEM images of the stress-relieving sample should also be presented and compared with TEM microstructure of as-built material.
10) There is no explanation about the differences in the [1012] and [1121] twinning planes reported elsewhere [36, 37] with the [1011] twinning plane reported by the Authors.
11) The first conclusion does not come out from the results of the research obtained from this work. It is a general conclusion. Also, the fourth conclusion is mistaken. The α' phase increase tensile strength and decrease ductility.
12) Line 113: The Ti6Al4V flakes were polished… Do you mean the TEM discs?
13) Line 118: … phase structure in the room temperature translates…, change for transforms?
14) There are also some typewriting and/or grammar mistakes that should be corrected.

In conclusion, the article can be published after revision.