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**Effects of sintering parameters on the microstructure and tensile properties of *in situ* (Ti<sub>5</sub>Si<sub>3</sub> + TiBw)/Ti6Al4V composites with two-scale network architecture**

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**ABSTRACT**

Titanium matrix composites reinforced with Ti<sub>5</sub>Si<sub>3</sub> particles and TiB whiskers have been synthesized successfully using the reaction hot pressing. In this paper, we investigated the influence of sintering temperatures (1200 and 1300°C), and holding time (range of 1–2 h) on the microstructure and mechanical properties of (Ti<sub>5</sub>Si<sub>3</sub>+TiBw)/Ti6Al4V composites. The results clearly indicate that as compared to the sintering time, the sintering temperature plays a more dominant role in controlling the microstructure and mechanical properties of the composites. The volume fraction of Ti<sub>5</sub>Si<sub>3</sub> precipitations in β-Ti increases significantly with an increase in temperature and time. The (Ti<sub>5</sub>Si<sub>3</sub>+TiBw)/Ti6Al4V composites with two-scale network architecture fabricated at 1300°C for 1.5 h exhibit excellent tensile properties.

**KEYWORDS:** titanium matrix composites, two-scale microstructure, sintering parameters, tensile property, reaction hot pressing