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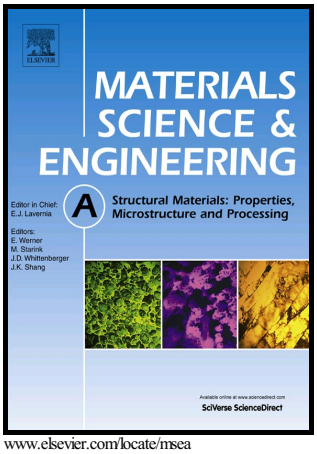


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# Relationship between microstructures, facet morphologies at the high-cycle fatigue (HCF) crack initiation site, and HCF strength in Ti-6242S.

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**Abstract**

The effect of microstructures on the high-cycle fatigue (HCF) properties of Ti-6242S (Ti-6Al-2Sn-4Zr-2Mo-0.1Si) was investigated. Five different microstructural conditions were generated through combinations of hot-deformation and heat treatments, and each was fatigue-tested using smooth round bar specimens at an R ratio of 0.1. The HCF behavior was found to be highly dependent on microstructures. The bimodal microstructure showed the highest HCF strength in the whole cycle range