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Fatigue crack growth rate threshold of laser powder bed fusion Ti-6Al-4V

With the ever-increasing interest in 3D printing, the drive towards its use in demanding applications, such as aerospace, is growing. This PhD investigates the near-threshold fatigue crack growth behaviour of the 3D printed Titanium alloy, Ti-6Al-4V. The study demonstrates the relationship between the process-specific attributes, such as high residual stresses and a metastable microstructure, and the fatigue crack growth behaviour. Understanding fatigue crack growth characteristics is particularly important in safety-critical applications as it allows for damage tolerant design methodologies in structural integrity and reliability assessments.

