

Carleton University

Department of Mechanical and Aerospace Engineering

Graduate Webinar Series

Tuesday November 2nd, 2021, 1:00 - 2:00 PM EDT

Effect of Ultrasonic Impact Treatment on the Fatigue Life of Ti-6Al-4V

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Abstract

Fatigue is a leading cause of engineering failure in a wide range of industries, including aerospace, automotive, biomedical, marine, among others. research on fatigue encompasses atomistic simulations to massive structural loading tests and everything in between. One technique that is seeing a resurgence in research interest is Ultrasonic Impact Treatment (UIT). Though originally developed in the Soviet Union in the early 1970s, new materials and experimental techniques have opened up new research opportunities into better understanding the fundamental mechanisms behind the fatigue life improvements generated by such treatments. The current research focuses on the optimization of force, speed and scan strategy of UIT for Ti-6Al-4V alloy, and better understanding of the effect of each optimization dimension on specific aspects of the material (e.g. residual stress, microstructure).

Bio

Mr. Peter Walker is currently a PhD candidate in the department of Mechanical and Aerospace Engineering at Carleton University with a research focus on the fatigue behavior of titanium alloys. He obtained his Bachelor of Engineering degree in Aerospace Engineering from Ryerson University in Toronto, he also obtained a Master of Applied Science degree from the same university. Mr. Walker did graduate internships with Bombardier Aerospace and Pratt and Whitney.