Theodore von Kármán Fellow – Guest Lecture

Time: Monday, 23.08.2021, 16:00 – 17:00
Place: Online
Speaker: Nobuhiro YOSHIKAWA
Professor
Institute of Industrial Science
The University of Tokyo, Japan
Title: Fatigue life prediction by means of microscopic stress analysis
Link: https://rwth.zoom.us/j/95955162510?pwd=Tng2SzdSSnhmK0NweENyUGhvRGtsUT09
Meeting-ID: 959 5516 2510
Password: 185892

Abstract
A versatile methodology for fatigue strength prediction is proposed to enable the optimal use of
the high specific stiffness and strength of unidirectional carbon fiber-reinforced plastic (CFRP).
Assuming that the fatigue strength of CFRP is governed by the strength of its resin matrix, we
have employed a microscopic approach to evaluate the stress using a micro-scale model that
considers the carbon fibers and resin separately. Fatigue life prediction is performed to verify the
methodology for unidirectional CFRP coupon based on the s-n curve of resin itself. Fatigue life
prediction is successfully performed using the interfacial normal stress, which is the normal stress
on a plane perpendicular to the line segment connecting the center axes of two carbon fibers.