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ice Publishing

Award-winning paper in 2021

Papers published in *Green Materials* are eligible for awards from the Institution of Civil Engineers. Papers from any of the ICE journals can be nominated for several awards. In addition, each journal has awards dedicated to their specific subject area.

On Friday 14 October 2022, ICE president Ed McCann presented an award to the following paper published in *Green Materials* in 2021. The editorial panel nominated their best papers and an awards committee chaired by Tim Broyd allocated the awards.

Green Materials Prize

The Green Materials Prize was awarded to Torun *et al*. (2021).

Abstract

Polylactic acid (PLA) is a widely used biomaterial in medical applications as a biodegradable and renewable aliphatic polyester type of material. This material is often subjected to different defects and damages from in-service and manufacturing conditions, and the increasing demand for PLA for different applications requires a thorough understanding of its fracture behavior. In this work, a numerical and experimental study of the mixed-mode fracture behaviors of three-dimensional (3D)-printed PLA samples with a zigzag pattern of different filling ratios was performed using a recently developed special loading fixture. The 3D-printed samples were produced with a 200°C nozzle at 60°C bed temperature and 50 mm/s printing speed. Mixed-mode fracture tests from pure tensile to pure shear loading were performed by varying the loading angle, α, from 0 to 90°. Finite-element analyses were conducted by using the Abaqus software program, and geometrical factors were obtained at different loading angles. As a result, the fracture toughness values of pure tensile loading, pure shear loading and mixed modes were determined.

REFERENCE

Torun AR, Yıldız EC, Kaya ŞH and Choupani N (2021) Mixed-mode fracture behavior of 3D-printed PLA with zigzag filling. *Green Materials* **9(1)**: 29–36, https://doi.org/10.1680/jgrma.20.00013.