

## Reinforce biodegradable poly(DL-lactic acid) (PDLLA) material using equal-channel angular extrusion (ECAE)

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The purpose of this study was to reinforce biodegradable poly(DL-lactic acid) (PDLLA) material using a new method, equal-channel angular extrusion (ECAE). Different processing parameters, including the number of extrusion passes and the process temperature, were investigated to analyze their effect on the PDLLA properties. Experimental results indicate that the mechanical strength of PDLLA increased with the number of extrusion passes. The extrusion temperature also affected the mechanical strength of the PDLLA. The bending fracture mode for PDLLA changed from brittle failure for initial specimens to ductile fracture after ECAE processing. SEM micrographs showed that the longitudinal split surfaces of PDLLA are of a fibrillar structure. Taken together, the results suggest that ECAE might represent a useful approach for the preparation of reinforced PDLLA.