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Effect of multiscale structural parameters on the mechanical properties of rice stems

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Abstract

The objective of this study was to investigate the relation between the structural parameters and the mechanical properties of rice stem at different scales. Tensile modulus and bending properties of different kinds of rice stems were measured through tensile and three-point bending tests. The morphology and microstructures of rice stems at different scales are detected by the scanning electron microscope (SEM), transmission electron microscope (TEM) and X-ray diffraction (XRD). It is found that the microfibril angle (MFA) and the volume fraction of the supporting materials

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