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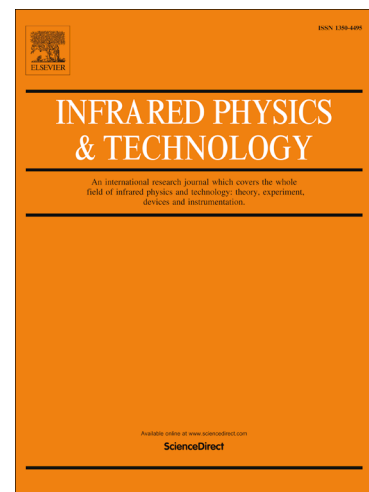
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Infrared thermography for wood density estimation

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Abstract

Infrared thermography (IRT) is becoming a commonly used technique to non-destructively inspect and evaluate wood structures. Based on the radiation emitted by all objects, this technique enables the remote visualization of the surface temperature without making contact using a thermographic device. The process of transforming radiant energy into temperature depends on many parameters, and interpreting the results is usually complicated. However, some works have analyzed the operation of IRT and expanded its applications, as found in the latest literature.

This work analyzes the effect of density on the thermodynamic behavior of timber to be determined by IRT. The cooling of various wood samples has been registered, and a statistical procedure that enables one to quantitatively estimate the density of timber has been designed. This procedure represents a new method to physically characterize this material.

Keywords: Timber structures; Non-destructive testing; Infrared thermography; Estimation; Density; Rehabilitation

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