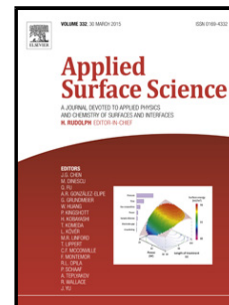


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Title: Effects of wood fiber surface chemistry on strength of wood-plastic composites

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**Highlights**

- Infrared spectroscopy and X-ray photoelectron spectroscopy analyses showed variations of surface chemical characteristics according to fiber origin.
- Surface chemical characteristics of fibers could partly explain the differences in mechanical properties of the wood-plastic composites.
- Fibers with carbohydrate rich surface led to stronger wood-plastic composites because the coupling between the matrix and fibers using coupling agent is achieved with polar sites mostly available on carbohydrates.
- Conversely, lignin or extractives rich surface do not have oxidized functions for the esterification reaction with coupling agent and thus led to wood-plastic composites with lower mechanical properties.
- Other factors such as mechanical interlocking and fiber morphology interfere with the effects of fiber surface chemistry.

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