Effect of a hydrothermal recovery process on the acidity, chemical composition and formaldehyde emission of wood particles recovered from laboratory and waste particleboards

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Key words: Hydrothermal treatment; particleboard; recovery; recycling; recovered particle properties

Abstract

The aim of the present paper was to study the effect of a hydrothermal recovery process on the acidity, chemical composition and formaldehyde emission of wood particles recovered from laboratory and waste particleboards. The hydrothermal treatments were carried out with saturated steam for 10min at a temperature of 150°C, after water impregnating of the specimens. The utilized particles were of two types: fresh wood particles commercially used in particle board production and particles recovered from waste particleboards collected by old furniture. The above particles were used for the production of laboratory particleboards and were recovered again. This procedure was repeated twice for each particle type. It was found out that the recovery procedure resulted in increased pH values as well as reduced formaldehyde emissions of both types of used particles. In terms of chemical composition, it was found out that the ash content of the particles was not significantly affected by the above procedure. On the other hand, lignin content was slightly reduced for the fresh particles whilst did not show significant differences for recovered particles. Holocellulose content was significantly reduced and the total extractives content seem to have increased due to the recovery procedure for both types of particles used.

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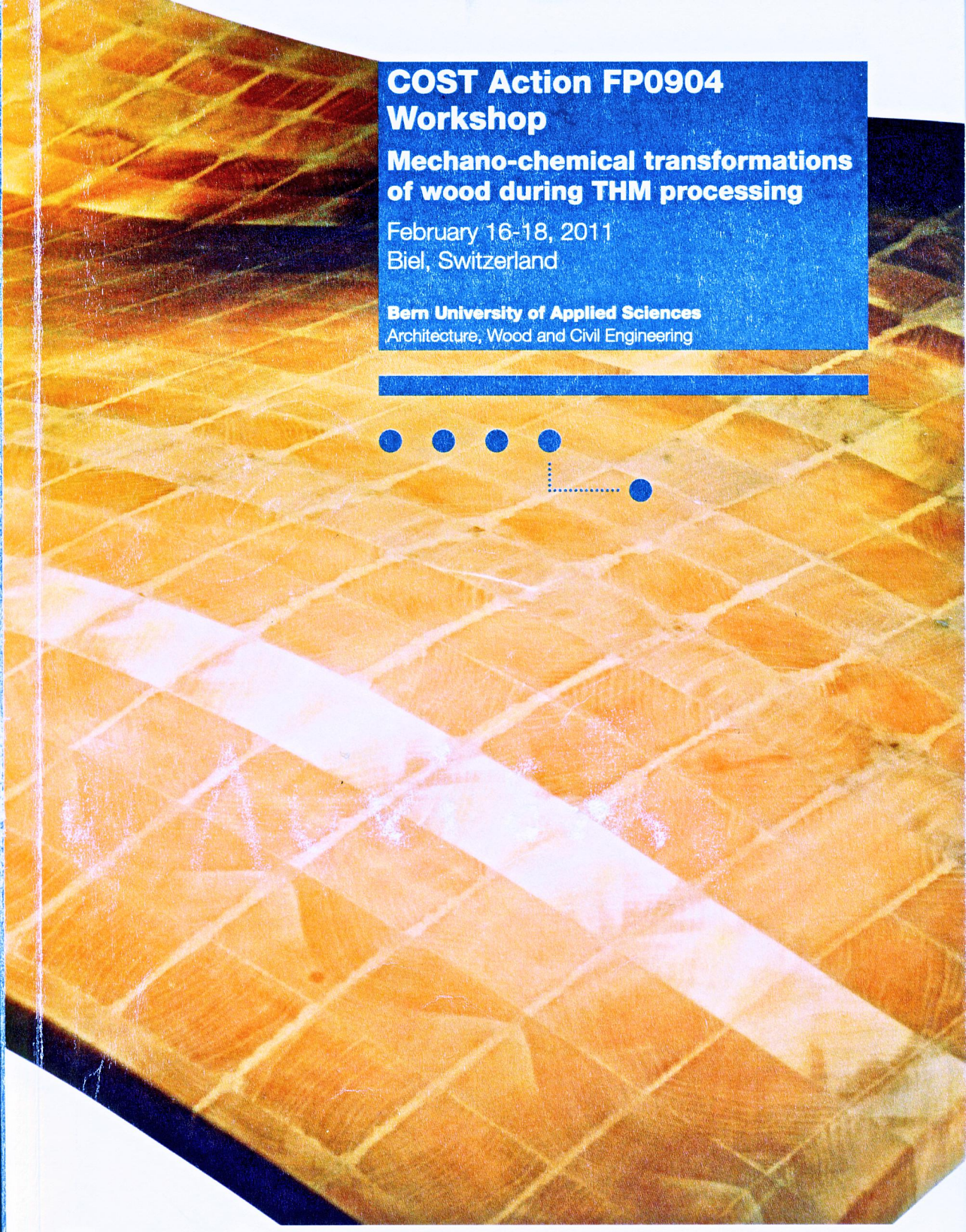

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