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## Preparation and performance of water-borne acrylic wood coatings modified by rice husk ash

**Shuangying Wei, Shiwei Guo, Xiaoke Bi, Jiuzhou Zhang, Bin Feng** and **Peiliang Liu**
Northeast Forestry University, China

Rice husk is an important biomass resource on the earth. The rice husk ash is the product of the burning of rice husk and its yield is huge. Its main component is silicon dioxide. The rice husk ash as modifiers has been successfully applied in the fields such as rubber, waterproof coating and so on. Acrylic wood coatings show the excellent comprehensive performance, but the properties in the aspect of the hardness and abrasion resistance are poor. The rice husk ash was added to the acrylic wood coatings system in this study in order to improve the performance of coatings. Firstly, the rice husk ash was treated with different temperature gradient of 600°C, 650°C, 700°C, 750°C and 800°C. They were added respectively to the waterborne acrylic wood coatings as modified fillers after fully grinding. The physical properties, gloss and mechanical properties of the coating film were tested. Scanning electron microscopy (SEM) and atomic force microscopy (AFM) were used to observe and analyze the microstructure of the coating film. The results showed that the rice husk ash handled with temperature of 700°C had the best modification effect. The modified coating film reflected 33.4°C of minimum film forming temperature (MFT), solid content increased to 18.3%, the abrasion resistance increased to 33.3%, hardness increased from HB to H, gloss decreased to 74% and fineness decreased nearly three times. The heat resistance and adhesion of the coating film were not changed, all of which were grade 2. The pigment and filler in the coating system were dispersed evenly with no aggregation.

### Biography

Shuangying Wei completed her Doctor's degree in Biomaterials Engineering in December of 2008 from College of Material Science and Engineering, Northeast Forestry University in China. She has published several papers in reputed journals. One paper authored by her was awarded by the Liang Xi Youth Paper Award in 2012 and was awarded the second prize of the thirteenth Heilongjiang Provincial Natural Science Technology Academic Achievement Award. She was sponsored for one project by the National Natural Science Foundation and Province Youth Science Fund Project of Heilongjiang.

dephnewsy@163.com

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