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Effects of Ultrastructure on Water Adsorption of Bamboo

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Abstract: The effects of cell structure of bamboo on water adsorption were thermodynamically analyzed using the chemical potential change induced by restrained swelling. The potential was proportional to the product of moisture content and the bulk modulus of the restraining region in the woody tissue. Analysis results showed that layers in the cell wall of bamboo act to resist swelling so that the isotherm curve of the block and fiber sample, where thin crystal threads called microfibrils are wound helically in the circumference, was lower than that of woody tissue powder. These results are similar to those of wood reported previously.

Keywords: bamboo, adsorption, thermodynamics, restrict, ultrastructure

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