

”A Novel Wood-Binding Domain of a Wood-Plastic Coupling Agent: Development and Characterization”

James Wilsford
Chemistry 345
December 1, 2003

Wood-Plastic Composites are a growing industry. By using various compatibilizers, the strength, stiffness, thermal stability, and resistance to ultraviolet degradation can be increased. This study deals with finding a better compatibilizer. Poly(N-acryloyl dopamine) or PAD was studied. Wood samples that were bonded with PAD were tested for shear strength and water resistance against conventional wood adhesives. Mixtures of PAD and PEI, polyethylenimine, were also studied. When wood samples bonded with PAD were put through WSAD, water soaking and drying, cycles, it resulted in an increase in shear strength. However the mixture of PAD and PEI resulted in a higher shear strength than PAD alone. The water resistance of the PAD and PEI mixtures were dependent on the PAD:PEI weight ratios and curing temperature.

Bibliography

Liu, Yuan, Li, Kaichang, *Macromol. Rapid Commun.* **2002**, 23, 739-742.

Li, Kaichang, *6th Pacific Rim Bio-Based Composites Symposium.* 58-67.

Youngquist, John, A. *For Prod J.* **1995**, 45, 25-30.

Clemons, Craig, *For Prod J.* **2002**, 52, 10-18.