

## **Hydrophobic wood particles developed from cold plasma polymerization.**

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The cost and availability of wood as made it a widely utilized material in many applications, however their inherent hydrophilic nature has limited their intrusion into other markets. At Washington State University we have developed a low-cost plasma operation that applies a polymer deposit on the surface of wood to alter the hydrophilic nature, including water diffusion. By using an atmospheric pressure weakly ionized plasma reactor wood veneers and particles were coated with nano-sized polymerized deposits on the wood cell surface. Results from contact angle and capillary rise tests showed a significant drop in water sorption of all wood substrates. The potential for this environmentally benign processing method lies not only in increasing the moisture performance and durability of WPCs, but also potentially enhancing the compatibility between wood and thermoplastic polymers. Recent work has also shown that an increase in deposition rate with modification to the reactor design providing more incentive for a potential commercial process.