# Technologies and processes for Durable, High Strength Wood-Polymer Composites

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**Project Contact:**
Ben Dawson-Andoh
Assistant Professor
WVU Division of Forestry
(304)-293-3825 ext. 2487
Ben.Dawson-Andoh@mail.wvu.edu

**Project Summary:**
The project objectives are to conduct a baseline study of wood-polymer composite processing and characterization techniques and to evaluate the susceptibility of wood-polymer composites (WPC) to biological deterioration. WPCs are subject to biological deterioration/degradation during service. Environmental Scanning Electron Microscopic studies have clearly demonstrated that wood particulates in the surface are not completely encapsulated by the polymer matrix. Consequently, un-encapsulated wood particulates exposed to moisture are colonized and discolored by fungi. Currently, zinc- and silver - based biocides and UV stabilizers are added to the WPC feed materials and distributed evenly throughout the resulting composite. Since biological deterioration/degradation activity is restricted to the WPC surface, this project seeks to locate the biocidal and UV stabilizers only at the surface by post-applying them in a coating. specific activities will include: (1) Configure WVU extrusion compounding facility and establish baseline operation conditions for WPC processing, (2) Develop/refine measurement techniques for interphase chemistry and fiber-matrix adhesion, (3) Determine the effect of Biocides on Durability.