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## New opportunities to valorize biomass wastes into green materials

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**Abstract**

Due to depleting natural resources, new environmental regulations and economic considerations, there is a constantly growing interest in using renewable resources. That is why, considering the growing awareness of environmental and waste management issues, green composites are increasingly promoted for sustainable development. Novel materials based on polylactic acid and different biomass wastes have been obtained and analyzed. The addition of biomass to a polylactic acid matrix resulted in more opaque materials, with decreased values of the water contact angle and acceptable values of mechanical properties. Thus, transparency decreased from 1.99 for polylactic acid to 0.94 for the material comprising pomace fibers. *Asclepias syriaca* fibers and celery root fibers determined a decrease in the water contact angle of about 9%, while pomace fiber led to a decrease of 3% and poplar seed hair fibers - of 7%.

The addition of *Asclepias syriaca* fibers into the polylactic matrix (as reference) resulted in a decrement of 42% in tensile strength and an increment of 10% in impact strength. Dynamic vapour sorption studies have indicated that sorption capacity increased by

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