

Influence of washing with sodium lauryl sulphate (SLS) surfactant on different properties of ramie fibres	
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<p>Abstract: Green composite materials are a means of reducing reliance on synthetic and especially single-use plastics (SUP) and raising public awareness of the need for urgent action to protect the planet. Natural (lignocellulosic) fibres are increasingly utilized as the reinforcement in polymer matrix composites, in search for increased renewability and sustainability. This work concerns the effect of washing ramie (<i>Boehmeria nivea</i>) fibres using sodium lauryl sulphate (SLS) surfactant. The SLS-treated ramie fibres were examined for their morphological, physical, thermal, structural, and mechanical properties by powder X-ray diffraction (XRD), Fourier transform infrared (FTIR) spectroscopy, thermogravimetric analysis (TGA), scanning electron microscopy (SEM), and tensile testing. SLS treated ramie fibres density and crystallinity index values were 1.23 g/cc and 84.5%, respectively, with a very high cellulose content of 81.3%, because hemicellulose and loose particles were dissolved. SEM images depicted the relevant changes, with no significant damage on treated fibre surfaces. With some assistance from the treatment, fibres initiated their degradation only above 250 °C, culminating at 327 °C, which appears suitable for the manufacturing of composites with the most common matrices.</p>	