Title: Sustainable bleaching of Juton fabric with peracetic acid and bleach activators.

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Abstract: Sustainable bleaching of Juton (a Jute-Cotton blend) fabric with peracetic acid (PAA) and bleach activators was investigated. The whiteness effect of PAA can be enhanced by adding bleach activators such as tetraacetylethylenediamine (TAED) and sodium nonanoyloxybenzenesulfonate (NOBS). This study evaluated six distinct bleaching methods on Juton fabric: using only PAA, using PAA/TAED, using PAA/NOBS, using only H_2O_2 (HP), using HP/TAED, and using HP/NOBS. The Juton fabric was bleached at different temperatures, in various pHs, and for different durations, using PAA, HP, and their combinations with TAED and NOBS. FT-IR, XPS, and SEM analyses were conducted to examine the chemical structure, bonding, and surface morphology of the Juton fabrics following the bleaching process. Fabrics bleached with PAA in combination with NOBS exhibited enhanced whiteness, oxygen-to-carbon (O/C) ratios, and mechanical properties.

Keyword: Juton Fabric, Peracetic Acid, Hydrogen Peroxide, Tetraacetylethylenediamine, Sodium Nonanoyloxybenzenesulfonate.

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