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# COMPATIBILISATION IN TRITICALE CELLULOSE - PP COMPOSITES

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## ABSTRACT

With considerable awareness to preserve environment and the petroleum run-of, great efforts across the globe have been pushed for the search of renewable and bio-degradable sources of material available on the earth. In this paper, the potential of using triticale straw particles, a renewable cellulose source, for the fabrication of green composites based on polypropylene (PP) was evaluated. The composites with different formulations and triticale concentrations were compounded using the C. W. Brabender Plasti-Corder and samples for testing were fabricated by compression molding. The structure and properties of PP triticale composites were characterized by means of various techniques, including scanning electron microscopy (SEM) and differential scanning calorimetry (DSC). The mechanical performance of composites was also evaluated. The results obtained demonstrate that without coupling agent triticale particles play a role of filler which increases the modulus while reducing the flexural strength. However, the presence of coupling agents based on maleic anhydride-grafted PP (MAgPP) can improve the strength but not the modulus. The newly developed formulation based on the combination of a coupling agent (MAgPP) and reactive additive (CaO) provides superior strength and modulus that can upgrade the triticale particles from regular filler to reinforcement categories (Fig 1). The observed improvements in composite strength can be interpreted by the enhancement of the fiber-matrix interface due to the presence of the reactive additives.

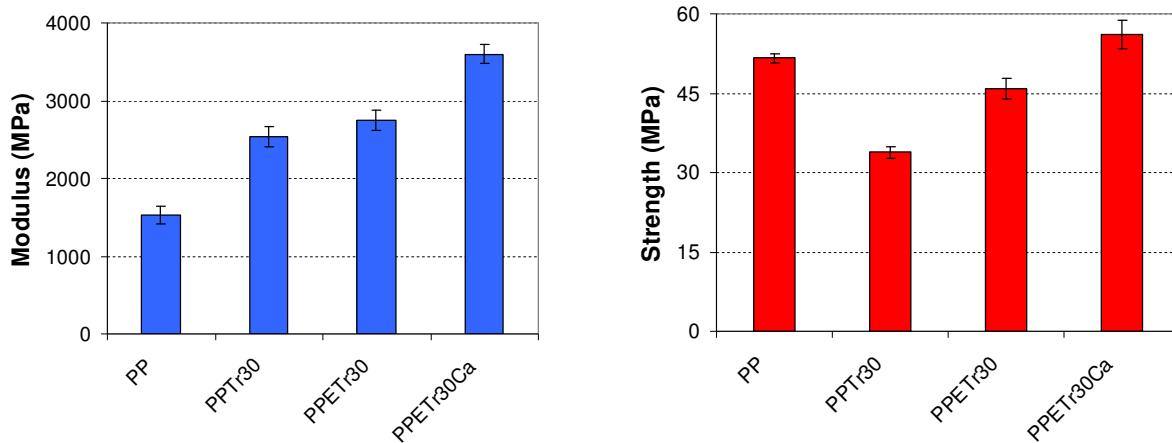


Figure 1. Flexural properties of PP triticale composites with different formulations

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