

# Proposition of a mechanical model to predict the behaviour of a laminate bio composite material

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**Abstract :** The purpose of this paper is to develop a mechanical model able to predict the mechanical behaviour of a laminate bio-composite material reinforced by the flax fibres without necessity to the expensive experimental test. A numerical comparative modelling based on finite element method is conducted by using in one hand a several stacking sequences, and in the other hand a growing plies number in order to estimate the lateral deflexion  $U_3$  in each plies of the bio-composite subjected to compression load. Meanwhile, the proposed mathematical model can be used as a power tool decision in design and the ensuring of the structure integrity.

**Keywords :** Bio-composite, laminate, flax, modeling