

The goal of this exploratory work was to evaluate the influence of two industrial by-products - **Kraft lignin** from forestry sector, and **corn cobs** from the French agricultural sector - on **biocomposites properties**. Several blends involving Kraft lignin and/or corn cob in a PLA matrix were compounded within *Valagro Recherche* French company. By incorporating 20 % (w/w) of by-products into a PLA matrix, the price of the developed biocomposites is expected to be lower than a PLA-made product. Granulates were injected for further characterizations such as flexural mechanical properties, hardness, thermal properties, surface tension, FT-IR spectroscopy, and density. Incorporation of corn cob and Kraft lignin increased flexural modulus of biocomposites to 3.7 GPa. Flexural strength was not drastically impacted since values ranged around 70 – 85 MPa. It was also observed an increase of biocomposites hardness with Kraft lignin rather than corn cob. DSC thermograms did not reveal any influence of the by-products on glass transition temperature of PLA.

The present product is a thermoplastic material, entirely bio-based, biodegradable, and it was obtained from simple formulation without any use of harmful solvent.

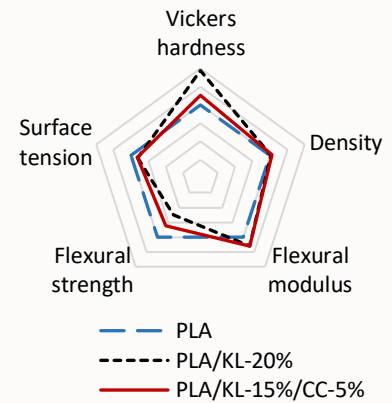


Figure. Properties normalized from PLA of injected samples containing 20 % reinforcement (Kraft lignin and/or corn cobs by-products)