

## Effect of different nucleating agents on crystallization and properties of Poly lactic acid (PLA)

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A better understanding of the crystallization behaviour of poly lactic acid (PLA) and its effects on the mechanical properties is critical for PLA to extend its application. In general, the crystallinity control of injection moulded PLA can be achieved by adding during extrusion proper nucleating agents [1, 2]. Several nucleating agents (LAK301, PDLA, Boron Nitride), nano fillers (Talc, calcium carbonate), were tested in variable amount and at two different temperature of the mould (105°C, and 120°C). All the nucleating agents investigated have a positive effect on crystallinity and on mechanical properties, but it was evidenced also that different nucleating agents have the tendency to favour respectively the  $\alpha$  or  $\alpha'$  crystalline structure of PLA, and this aspect is particularly interesting since would allow the selection of a specific nucleating agent in dependence of the crystalline structure that we wish to promote in PLA based materials. Takayanagi model can be applied to materials prepared with nucleating agents and PLA, supporting the correlation of Young's Modulus values with the percentage of crystallinity of the material.

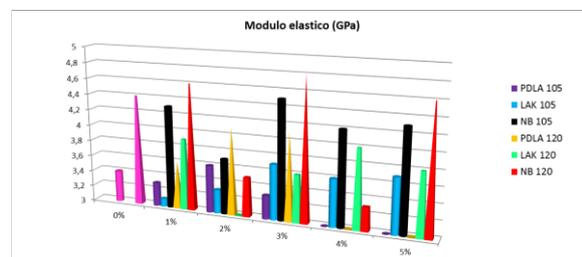


Fig.1 Young's Modulus variation as a function of LAK, PDLA, and NB content, and temperature of the mould

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### References

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