

## **Improving the performance of wood fibre reinforced PLA biocomposites**

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While biocomposites have gained significant interest during the past years with lower carbon footprint and utilisation of natural resources, typical disadvantages in conventional commercial biocomposites are the use of fossil-derived matrix materials and challenges in building up a feasible recycling system. Poly(lactic acid) (PLA) based biocomposites, as totally bio-based, industrially compostable, but also recyclable materials, provide an alternative material option for several end-applications. PLA is bio-based, stiff biopolymer, available in high quantities and in several grades, and enables good fibre dispersion and natural adhesion to lignocellulosic fibres. At VTT, years of efforts have been made in researching and developing wood fibre reinforced PLA biocomposites to further improve their properties, thus broadening the application areas for these totally bio-based materials. The efforts include studies of using various wood fibre types and their effect on reinforcing capability and end-properties, utilisation of compatibilising agents and fibre physical treatments, as well as studying the effect of fibre surface characteristics on reinforcing prospects. As a result, significant improvements and progress have been achieved. The presentation summarises the research activities, and highlights the most important factors affecting the performance of wood fibre reinforced PLA biocomposites.