Maastricht University

Timing of interfacial diffusion and (stereo)crystallization to tailor mechanical properties of additively manufactured poly(lactides)

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Propositions

belonging to the dissertation:

Timing of interfacial diffusion and (stereo)crystallization to tailor mechanical properties of additively manufactured poly(lactides)

1) Optimum interfacial mechanical properties in fused deposition modeling (FDM) requires judicious timing of crystallization and molecular diffusion.

2) Interfacial stereocomplexation provides an efficient route to simultaneously enhance interfacial mechanical properties and geometric stability of a printed product.

3) Spatial control of crystallinity via heat-controlled fused deposition modeling of poly(lactides) can yield mechanically anisotropic body-mimicking materials.

4) How additive manufacturing will revolutionize manufacturing: “Not by making the same thing differently. But it will by rethinking the entire process to create higher quality products” – excerpt from Industry in 3D

5) People should not compare additive manufacturing to injection molding. Additive manufacturing will not replace injection molding. It will find use in applications demanding high value and potentially tuneable functionalities.

6) Field of additive manufacturing will benefit from development of application specific materials.

7) There exists no perfect FDM printer. Not all are the same and some features always seemed to be missing for this research.

8) A Friday afternoon experiment can end up with one year of research and two chapters in a thesis.

9) FDM printing is time consuming. Optimising print settings to obtain a good sample is even more time consuming.