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Selective Recrystallization of Cellulose Composite Powders and Microstructure Creation through 3D Binder Jetting

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Highlights:

- Bespoke, small scale powder layering set up created.
- Thermal and rheological effects of ball milling on xanthan gum investigated.
- Structures created using 3D binder jetting of cellulose and glucomannan powder.
- Comparison structures created using 3D binder jetting of maltodextrin powder.
- MicroCT Image analysis of 3D structures.

1 Abstract

Binder jetting is an additive manufacturing technique in which powdered material is sequentially laid down and printed on by an ink binder, in a selective manner, to form a 3D object. Unfortunately work in this area relevant to food materials is largely unpublished, however a typical application of this technique is sugar powder bound by a water and alcohol based ink with optional colour or flavour demonstrated by commercial ventures. In this work we demonstrate the use of a small scale powder layering device under an ink jet printer to test prototype

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