Thermographic analysis of hot-extrusion 3D printing of sodium caseinate and processed cheese

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Scan to watch printing

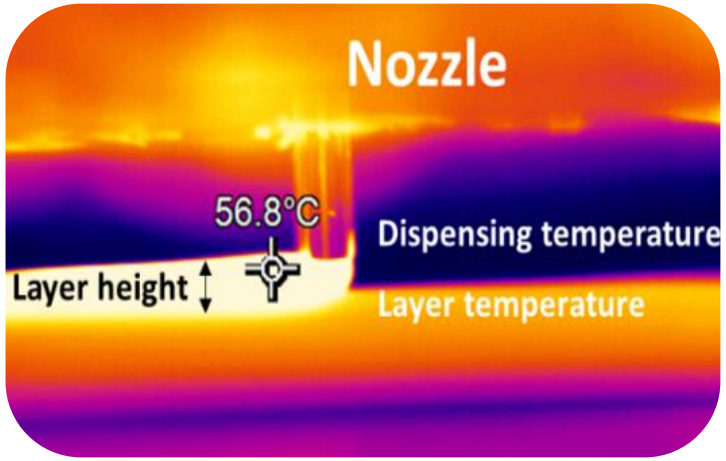
Background

Hot-extrusion 3D food printing involves several physiochemical phenomena: heat transfer, non-Newtonian flow, solidifications, and deformations.

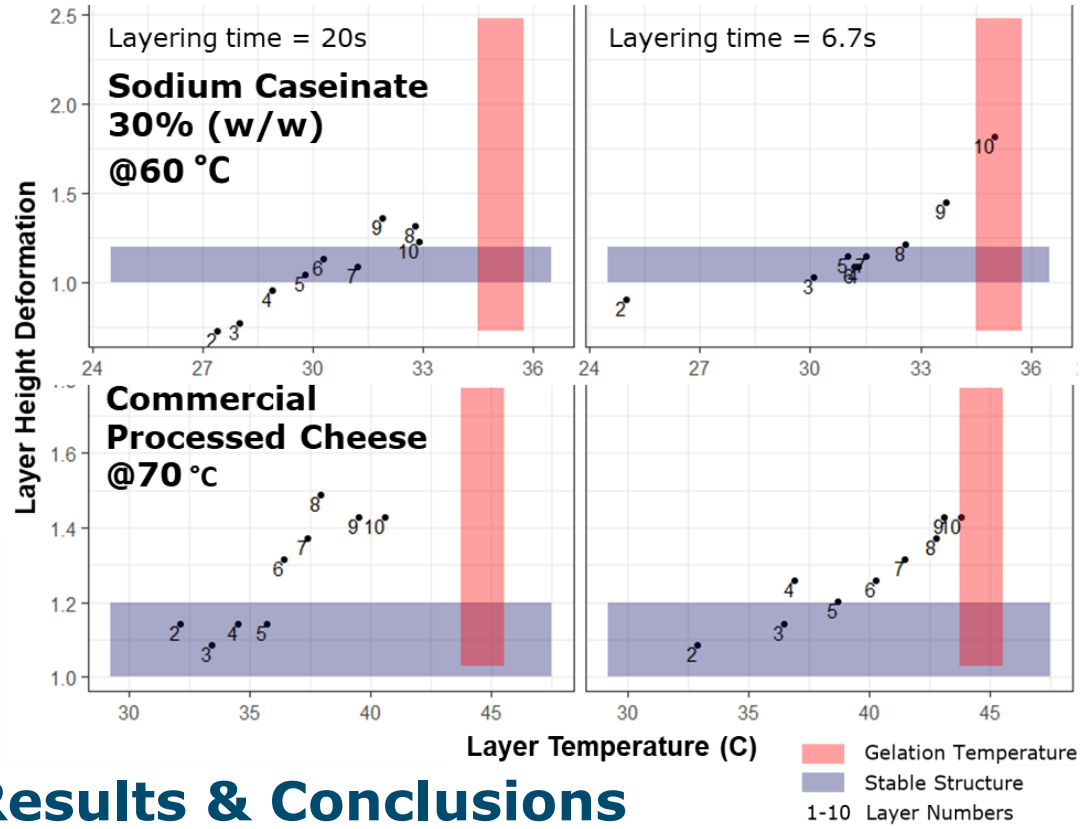
Objectives

To monitor heat transfer and material deformations during hot-extrusion using thermographic analysis

Experimental Approach



- Deformation: change of **layer height**
- Heat Transfer: change of **layer temperature**



Results & Conclusions

- Material **temperature increased** with continuous layering
- Thermal camera can identify **the critical temperature**
- Printing critical temperatures are **below the "gel point"**

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