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### **3D-printing by fused deposition modelling in pharmaceuticals**

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Fused deposition modelling (FDM), constitutes a versatile and cost-effective representative of the 3D-printing (3DP) techniques. With roots in engineering, it was first considered for pharmaceutical purposes based on its potential of personalization.

Compared to the conventional powder compaction methodologies, in this case the tablet is constructed from melted and extruded subsequent layers. As, for the drug, it is incorporated within a filament, which for appropriate mixing and loading purposes, nowadays is manufactured via preliminary hot melt extrusion (HME).

The integration of 3DP-FDM in pharmaceuticals is promising. The technology is capable of producing a wide palette of designs that normally are hard to produce, like channelled, layered, compartmented tablets, associating one or several APIs and release profiles. It can also bring quality improvements compared to conventional dosage forms. Case study proved that high quality floating tablets can be obtained via HME+FDM [1].

Still, the adaptation of pharmaceutical polymeric blends to FDM can be difficult as the appropriate rheological and mechanical equilibrium for the filaments is hard to obtain [2].

#### References

1. Ilyés K, et al. Int J Pharm. 567 (2019)
2. Ilyés K, et al. Eur J Pharm Sci. 129, 110–23 (2019)

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