

Lamprou Lab
Emerging Technologies



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Design-controlled co-administration of ibuprofen and itraconazole via an HME-FDM 3D printing platform

Vlad-Nicolae Lesutan

PhD Researcher

05 July 2026



Our Research Group



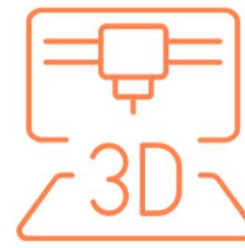
19th in the world
for Pharmacology and
Pharmacy
(World University Rankings 2026)



**QUEEN'S
UNIVERSITY
BELFAST**

**TOP 175
IN THE
WORLD**

Queen's is ranked
174 in the QS
World University
Rankings 2027.

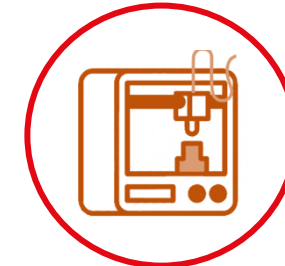


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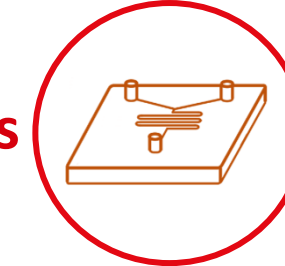
With expertise in:

3D Printing



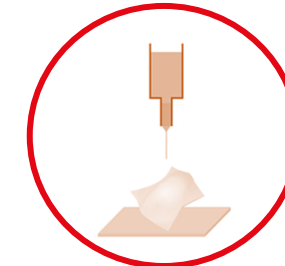
**Top 0.01%
worldwide**

Microfluidics



**Top 0.07%
worldwide**

Nanofibers



**Top 0.64%
worldwide**

United Kingdom & Ireland Controlled Release Society (UKICRS)



- United Kingdom Controlled Release Society was formed in 1994.
- In 1998, Ireland joined forces and the United Kingdom and Ireland Controlled Release Society (UKICRS) was formed.
- The society holds a yearly in-person symposium and a yearly online seminar
 - Good representation from both academia and industry.
 - Recently started providing funding opportunities for undergraduate students to attend too.



2026 UKICRS Symposium

11–12 June 2026, Glasgow, Scotland

An opportunity for undergraduate students to attend UKICRS 2026!

UKICRS are offering funding to support undergraduate attendance at our annual UKICRS symposium



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HARKE
UK & Ireland



Background

- Personalised medicine drives demand for flexible dosing.
- Conventional manufacturing struggles with patient-specific therapies.
- 3D printing enables on-demand fabrication of oral dosage forms. (1)



- Improved patient adherence and acceptance.

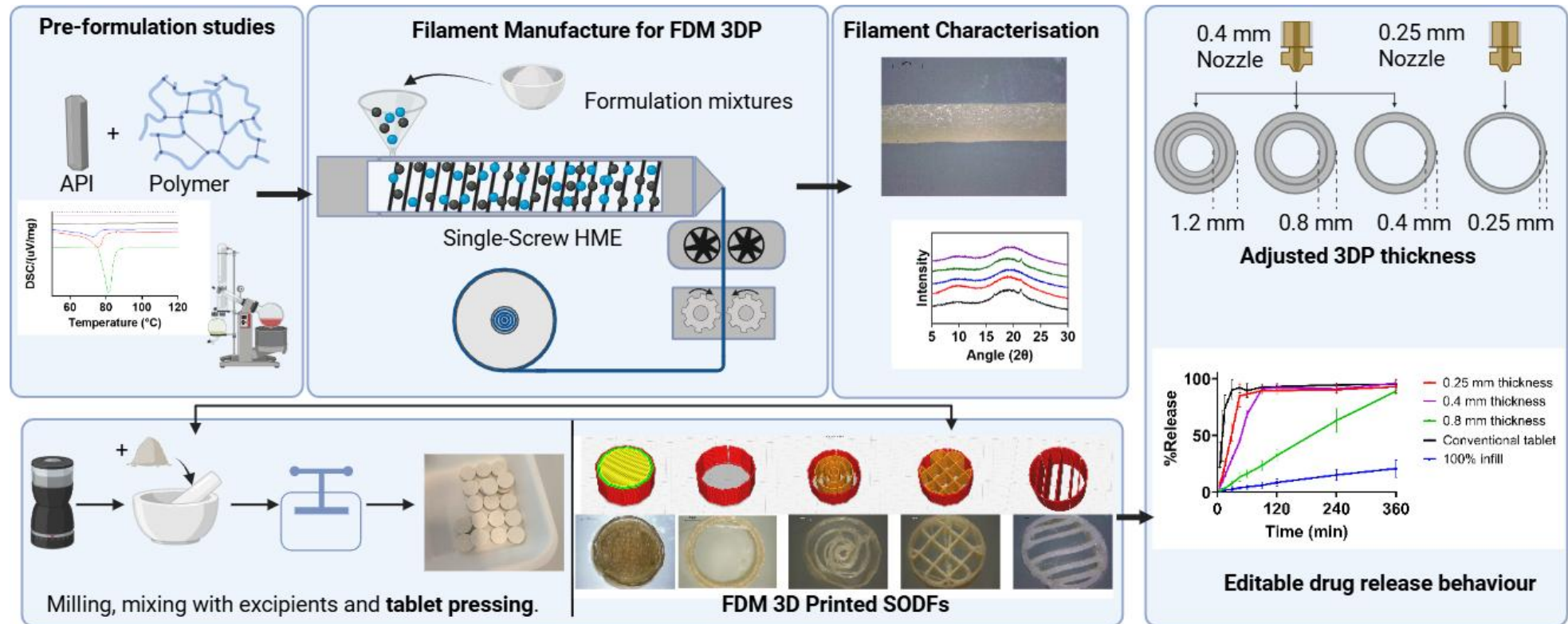


- Reduced pill burden by personalising the dosage size.



- Reduced material waste by providing on-demand medication

- Initial studies (2) showcased the importance of formulation, design selection and printability optimisation for obtaining rapid release systems.

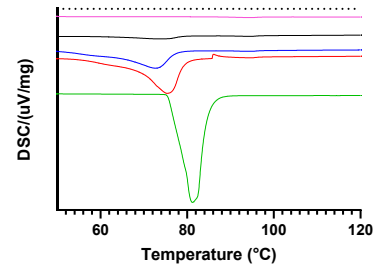
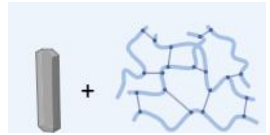


- Lesutan, V.-N., Andersen, S. K., & Lamprou, D. A. (2025). Poorly water-soluble APIs in fixed-dose combinations: development, challenges, and opportunities in manufacturing techniques. *Journal of Drug Delivery Science and Technology*, 111, Article 107212. <https://doi.org/10.1016/j.jddst.2025.107212>
- Lesutan, V.-N., Andersen, S. K., Quinten, T., & Lamprou, D. A. (2026). Evaluating FDM 3D printing and conventional tableting for producing ibuprofen amorphous solid dispersions. *International Journal of Pharmaceutics*, 700, Article 127038. Advance online publication. <https://doi.org/10.1016/j.ijpharm.2026.127038>

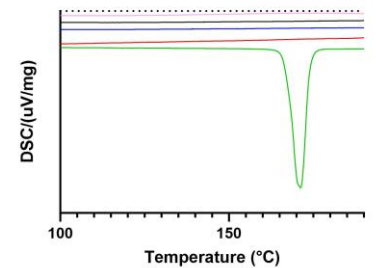
Results

Pre-formulation

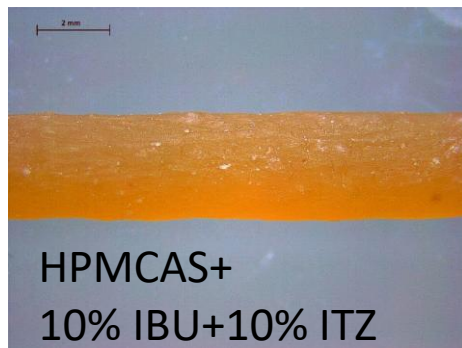
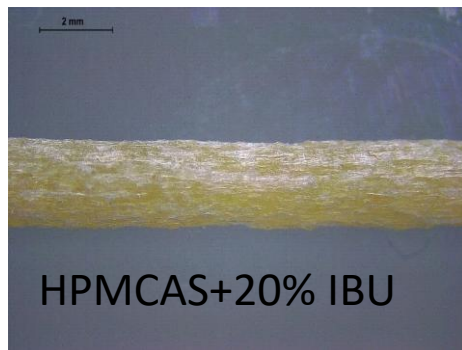
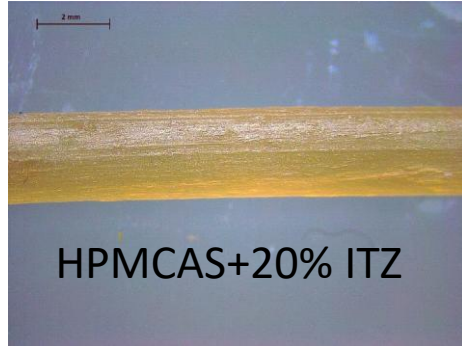
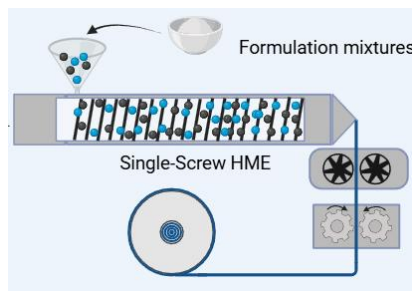
API+Polymer



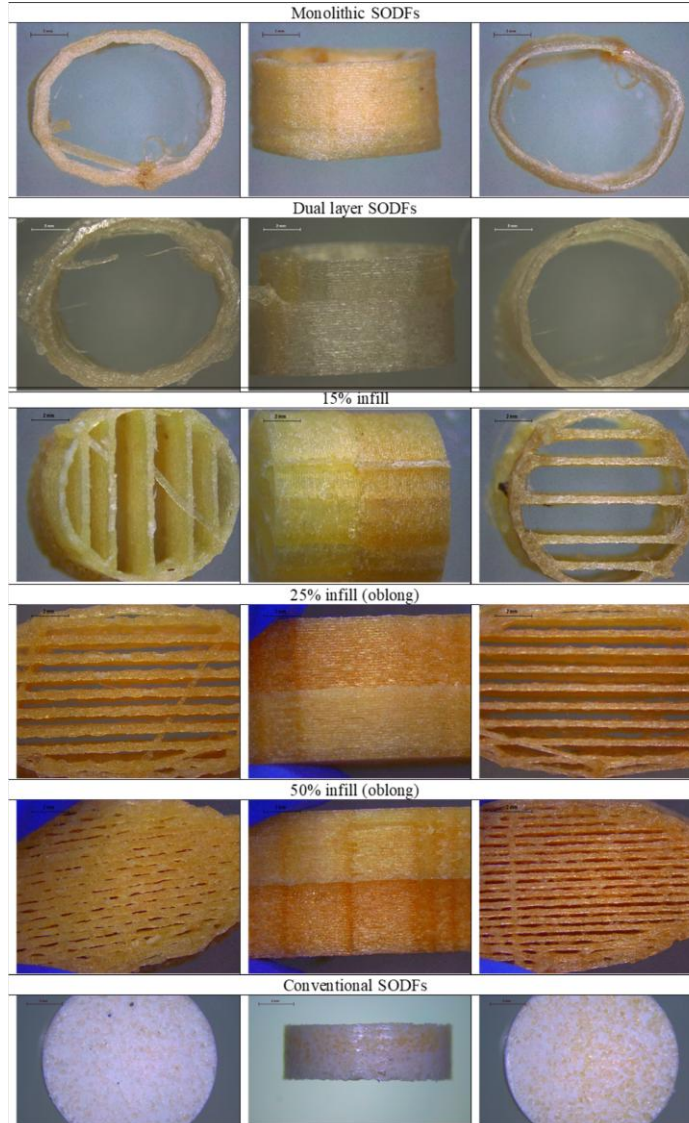
— IBU:HPMCAS=1:3
 — IBU:HPMCAS=1:2
 — IBU:HPMCAS=1:1
 — IBU:HPMCAS=2:1
 — IBU



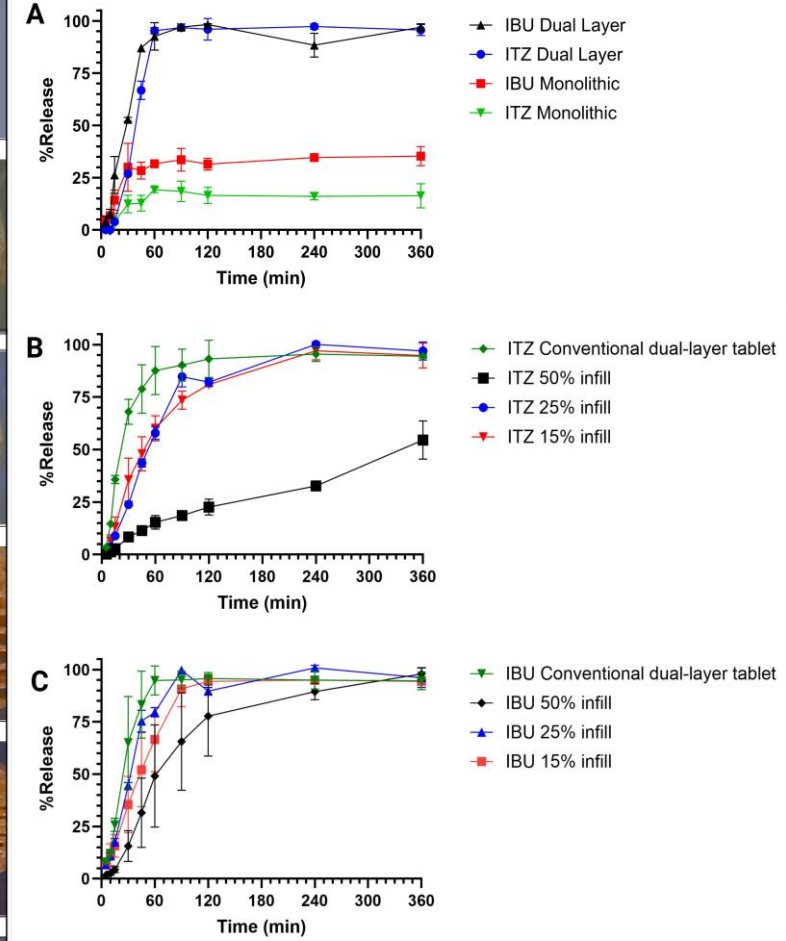
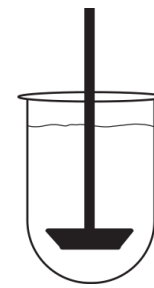
— ITZ:HPMCAS=1:3
 — ITZ:HPMCAS=1:2
 — ITZ:HPMCAS=1:1
 — ITZ:HPMCAS=2:1
 — ITZ



3DP



Dissolution



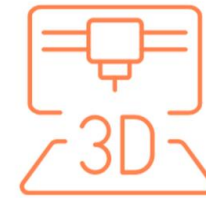
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Any questions?

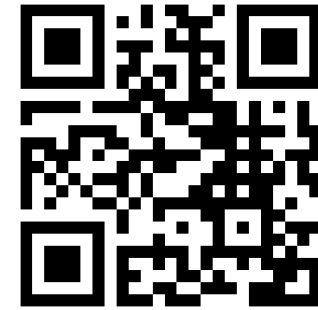


Poster number 428, Pavilion 2

Thank you for your attention!



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www.lamproulab.com

