



CUSTOMER
STORY

PHARM3D

Reshaping the future
of pharmacy



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«With the help of SLS we can reshape the future of pharmacy.»

The Faculty of Pharmacy of the University of Belgrade is home to the first and only 3D laboratory of its kind in Serbia. In the so called “Pharm3D” lab the pharmacists investigate 3D printing of pharmaceuticals with the help of a Sintratec Kit.

Professor Svetlana Ibric of the Department of Pharmaceutical Technology and Cosmetology at the University of Belgrade works on the development of controlled release dosage forms and process optimizations in the pharmaceutical field. She was the one who decided to form a 3D laboratory and research team with the focus on 3D printing in pharmacy. Students, scholars and professors of the institution now all profit from this growing infrastructure.

Investigating 3D printing methods

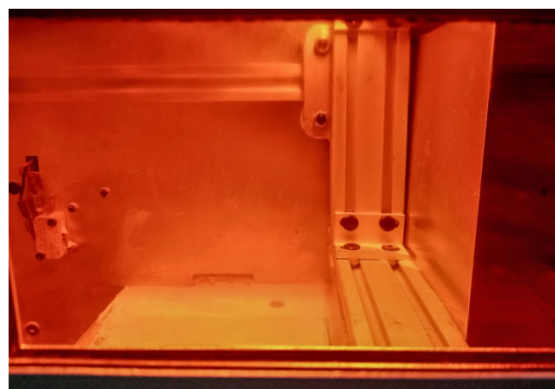
One beneficiary is Marijana Madzarevic, third-year PhD student in Pharmaceutical Technology. „We are proud to say that this is the first and for now only 3D laboratory of pharmaceuticals in Serbia“, she says. In the so called “Pharm3D” three types of 3D printers are used: Fused Deposition Modelling (FDM), Stereolithography (SLA) and with latest addition of a Sintratec Kit also Selective Laser Sintering (SLS). Marijana and her team are investigating the applicability of various known pharmaceutical excipients with these additive technologies. Selective Laser Sintering awakened the scientist’s interest since – unlike the other types – its printing material is powder based which is already common for conventional pharmaceuticals.

Exploring the possibilities of SLS

Like every 3D printing technology SLS has its own advantages and disadvantages for pharmaceuticals. Some excipients (e.g. mannitol or lactose) simply cannot be laser sintered into a stable tablet on their own. That is why Marijana’s team is focussing their research on different initiators to help with the solidification process. „We want to investigate a variety of safe, pharmaceutical grade substances that help in the solidification of commonly available constituents of tablets and to easily form a tablet with target drug release (fast, slow, pulse), depending on the needs of the patients.“ According to Marijana such personalisation of pharmaceutical products by means of additive processes could become the industry’s standard in the future.



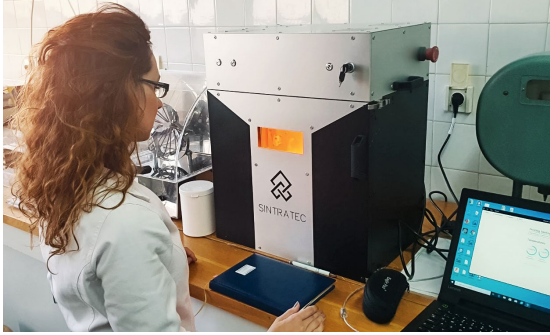
Ideal research tool: The Sintratec Kit is used intensively by students, researchers and professors of the faculty.



Instead of polymers, the scientists of the University of Belgrad fill the volume of the Sintratec Kit with pharmaceutical excipients.



Tablet 3D printed with the Sintratec Kit: Selective laser sintering enables unconventional shapes, dosages or dissolution times.



Marijana Madzarevic in the 3D printing laboratory of the Department of Pharmaceutical Technology and Cosmetology.

Great potential for the future

„With the Sintratec Kit we can put the mixture in the print container, click on print and have a tablet – no more compression is required“, Marijana explains. This aspect makes the technology particularly interesting because compression tends to be restricting. Replaced by this additive method a whole new array of possibilities opens up, ranging from intricate shapes of tablets to customized dose accommodations. The massive potential of SLS in this field is evident. For pharmacists, however, the patients and their well-being have the bigger priority. Marijana emphasises, that before any implementation this method has to be meticulously investigated with the pros and cons thoroughly evaluated. She remains confident: „We want to overcome the cons and maximize the benefits of selective laser sintering in pharmaceuticals.“

Educational value of new technologies

Perhaps even more important than research is the educational side. „We are proud that we can show the students 3D printing technologies in actuality and not just talk about it“, says Marijana. The faculty has a very active centre for their student’s scientific research and enables them to include additive technologies into their work. For an educational institution like the University of Belgrade it is key to stay current with the latest technology and digitalization trends. Marijana hopes, that with a growing laboratory the coming generations of pharmacists all will have the opportunity to create 3D models and print tablets. She summarizes: „Together we can reshape the future of pharmacy!“



Affordable high-tech systems like the Sintratec Kit allow institutions such as the University of Belgrade to keep pace with digitalization.

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