

# Absorber manufacturing

## Progress report

Strekalina Daria

# Absorber Technologies

- 1) Selective laser melting
- 2) Metal Injection Molding
- 3) Chemical vapor deposition

# Work plan

No	Stage name	Dates	Price	Goals
1.1	Purchasing tungsten powder from EOS	01.03.2020 - 31.05.2020	25 000 CHF	Obtaining BAFA export permit for purchasing the tungsten powder from EOS
1.2	Manufacturing of the prototype of 20 mm thickness by Farsoon Techniques	01.03.2020 - 31.05.2020	Free	Determination of the applicability of the SLM technique.
2	Printing of the absorber prototype in NUST MISiS	01.06.2020 - 30.09.2020	-	Development of the 3D printing technologies with W powder on equipment of NUST MISiS Printing the prototype 46.5×46.5×100 mm <sup>3</sup> Determination of roughness and tolerances during printing with spheroidized EOS powder
3	Optimization of the print mode, reduce print costs	01.09.2020 – 31.12.2020	from 25 000 CHF	Purchasing tungsten powder from FARSON Investigate the influence of the quality of the powder on the quality of the final product. Printing the absorber cell of 120×120×100 mm <sup>3</sup> Determining the cost of the final absorber.

## Задачи:

- 1) Получение письма от ЦЕРНа
- 2) Написание развернутого плана работ

Tungsten Powder Delivery OA20004533



Dear Mr. Korolev,

Please find below the translation of the original request issued by the Federal Ministry of Economics:

*"Dear Sirs,*

*I refer to your letter of 05.02.2020*

*For the processing of your above-mentioned request, I still need additional information or documents:*

*a copy of the letter of intent referred to in the above letter, or a statement by the contracting party in Switzerland."*

Without such a copy or statement by the contracting party, our authorities will cancel the export approval application after March 7, 2020.

Please provide the documents before March 7, 2020.

With best regards

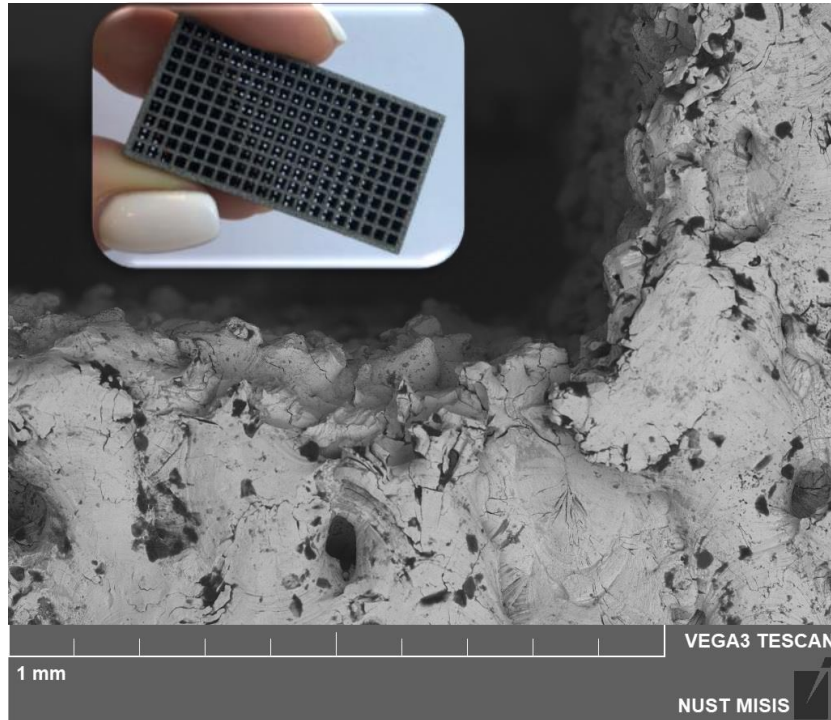
EOS GmbH

Electro Optical Systems

Stephan Müller

Export Control Representative

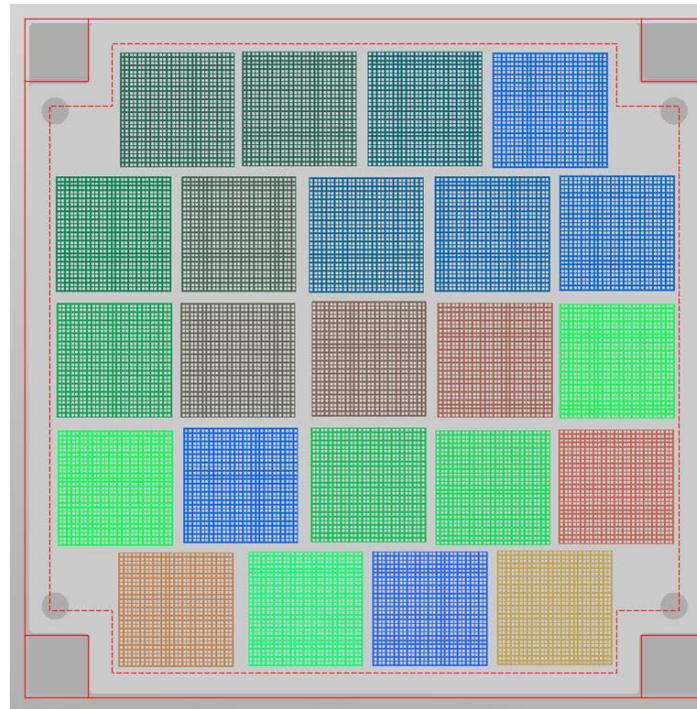
# FARSOON TECHNOLOGIES company prototype



Roughness

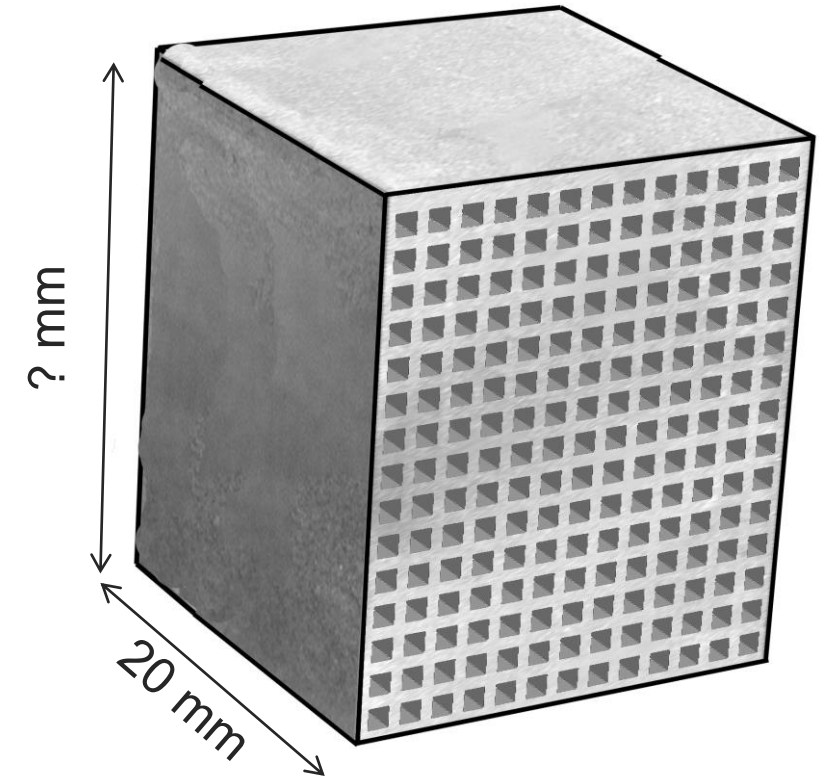
$R_a = 5 \mu\text{m}$  (external)

$R_a = 9 \mu\text{m}$  (internal)



Printing time - 311 hours

The cost of 23 pieces is  
about 31 000 CHF



Задачи:

1. Сделать чертежи для FARSOON TECHNOLOGIES (Эрнест), определиться с допусками
2. Поиск деталей напечатанных из качественного порошка, чтобы сравнить шероховатость

# Привлечение в аспирантуру

Слушатели образовательной программы, которые начали работать по проекту:

1. [Шахзод Дадабаев](#) – расчет параметров ливня в программе GEANT4, подготовка к семинару для школьников
2. [Эрнест Слепцов](#) – создание чертежей для прототипа 2 см
3. [Abdalaziz Rashid](#) – написание эссе по тематике проекта

## MIM

- 1) Написание развернутого плана работ
- 2) Обсуждение цены образца массой более 200 грамм

## CVD

- 1) Написание развернутого плана работ