OPTOMAN

YOUR SIDEKICK FOR
LASER OPTICS DEVELOPMENT

Low Absorption Coatings on Transmissive Micro-Optics

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WHAT IS OPTOMAN?

2017 | 2021 | 2022 | Future

BABY OPTOMAN

2 founders
Spin-off from CPST
Independent.
47 000 EUR revenue 1st year

Dr. Simonas Kičas
Doctor of IBS, LIDT and GDD

Remigijus Šliupas
Master of laser aphysics, BDR, SDR, Marketing and some other 100 hundred things

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2017 | 2021 | 2022 | Future

Growing nicely

Entered 2021 with 12 employees
Finished 2 500 000 EUR revenue

2017 | 2021 | **2022** | Future

OPTOMAN today

24 sidekicks do all the magic
4 000 000 EUR revenue forecast

Mission: OPTOMAN – your sidekick for laser optics development

Vision: OPTOMAN - number one choice manufacturer for laser optics worldwide.

2017 | 2021 | 2022 | Future

Projected investment

Facilities

2022: +300 m^2 ISO6 clean room
2023: +400 m^2 production facilities (not so clean)

Coating chambers

2022: +1 IBS chamber for mid-IR solutions
2023: +1 IBS chamber.
2024: +1 IBS chamber and so on…

Additional equipment

2022: +1 ARGOS for automatic quality inspection, + 1 interferometer, +1 USC cleaning station for volume and big optics.

Partners oriented investment to capacity and capabilities.

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WHAT DO WE DO?

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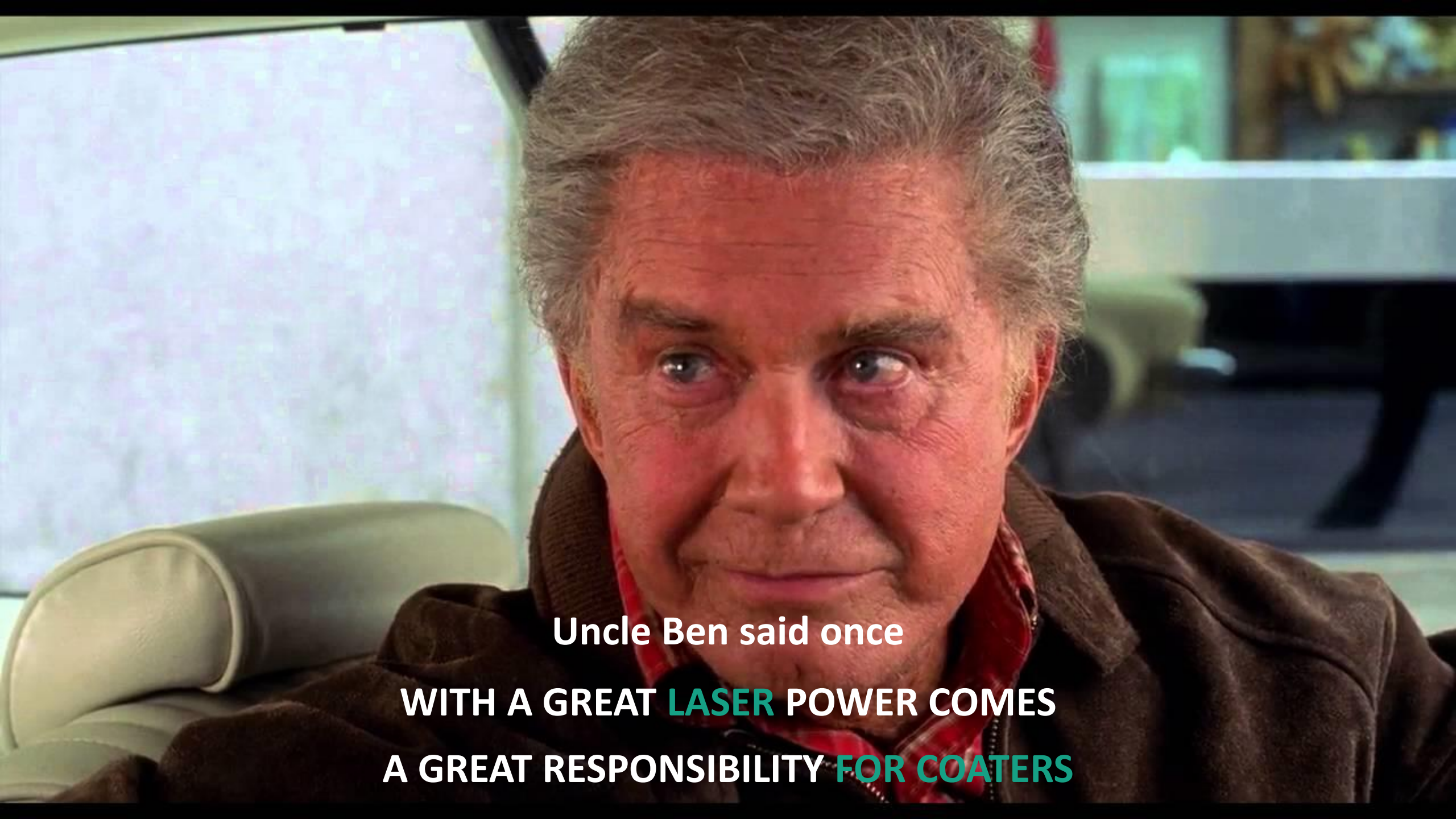
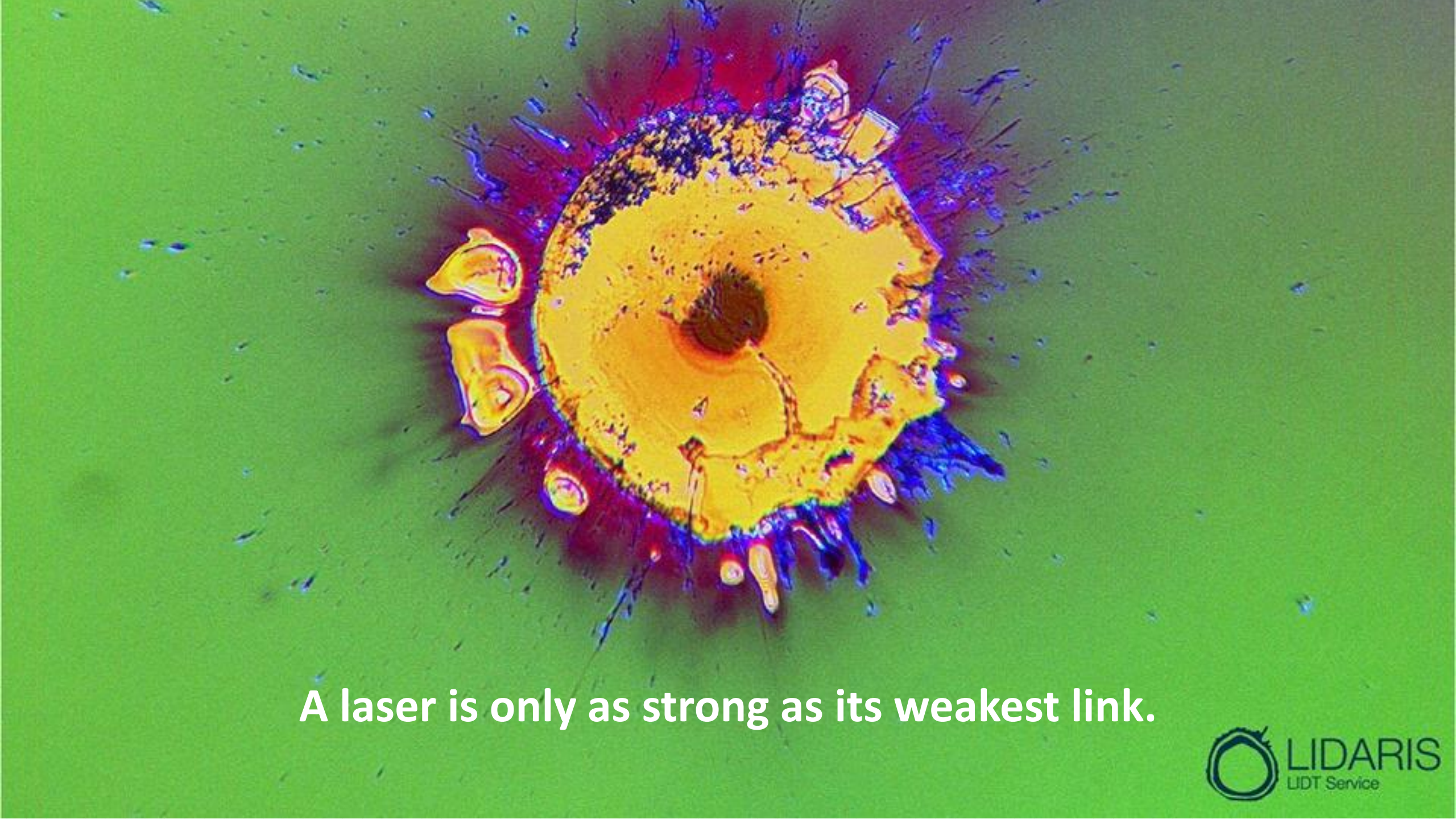

Uncle Ben said once
WITH A GREAT LASER POWER COMES
A GREAT RESPONSIBILITY FOR COATERS



A laser is only as strong as its weakest link.

LIDARIS
LIDT Service


“Nobody beats Vitas Gerulaitis 17 times in a row.
— VITAS GERULAITIS,
upon beating Jimmy Connors
after 16 consecutive losses to him

HOW DO WE DO THAT?

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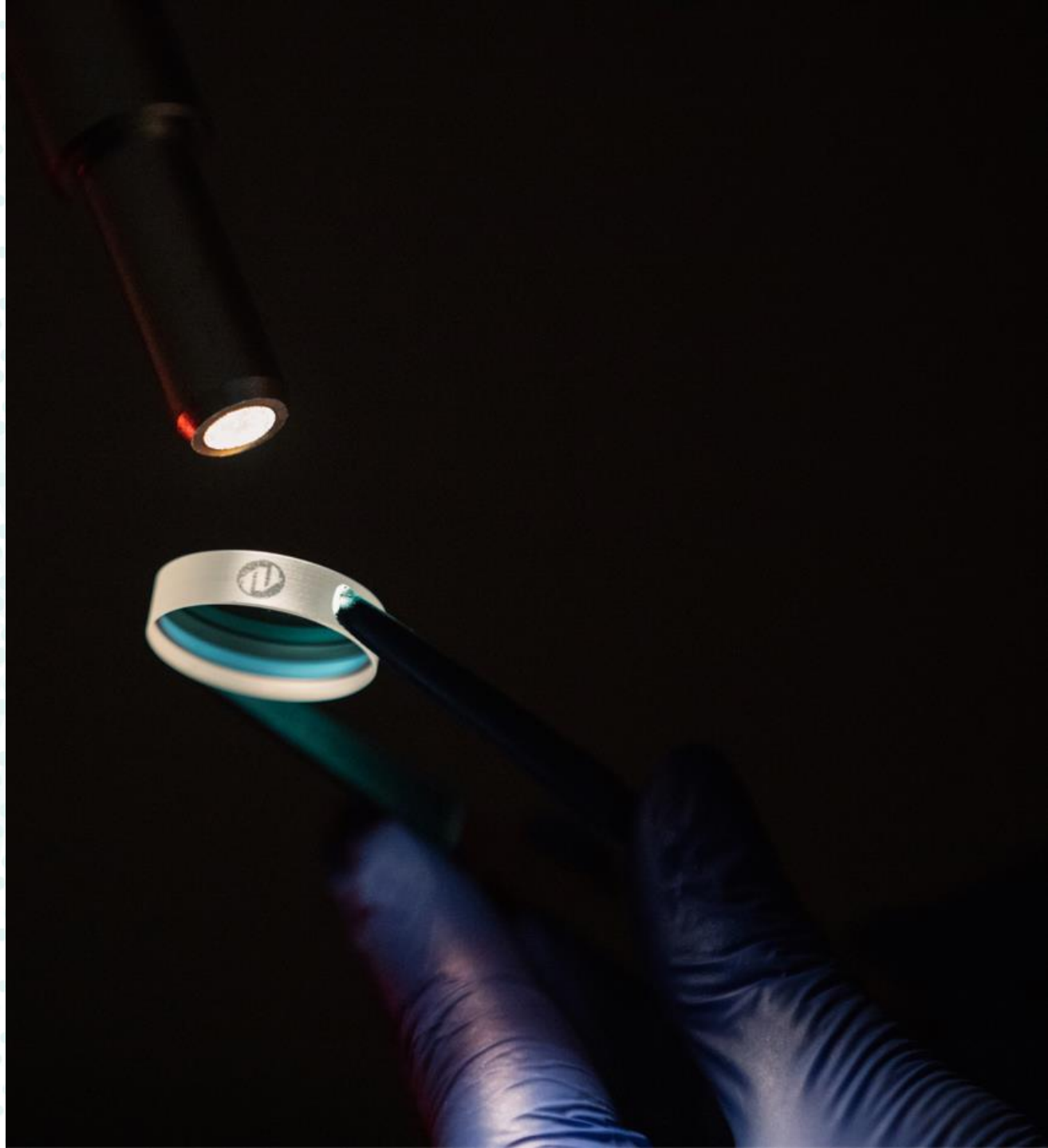
Concentration

Highly customized and application-optimized laser optics for **high power** and **ultrafast lasers** with **ultrafast turnaround**.

R&D-driven issues solving on the fast-track to serial production.

„Intelligence is a privilege, and it needs to be used for the greater good of laser people.“

Dr. Otto Octavius



Concentration

Single manufacturing technology

Ion-Beam Sputtering

PETRA

Effective (±0.5% edge-to-edge uniformity) coating area
ø270 mm x 2 pallets

ALBERT – THE ATOM SMASHER

Effective (±1% edge-to-edge uniformity) coating area
ø600 mm x 2 pallets

Make it clean!

Class ISO 6 clean room
lab environment
for contaminant-free
manufacturing

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LOW ABSOPTION COATINGS ON MICRO OPTICS

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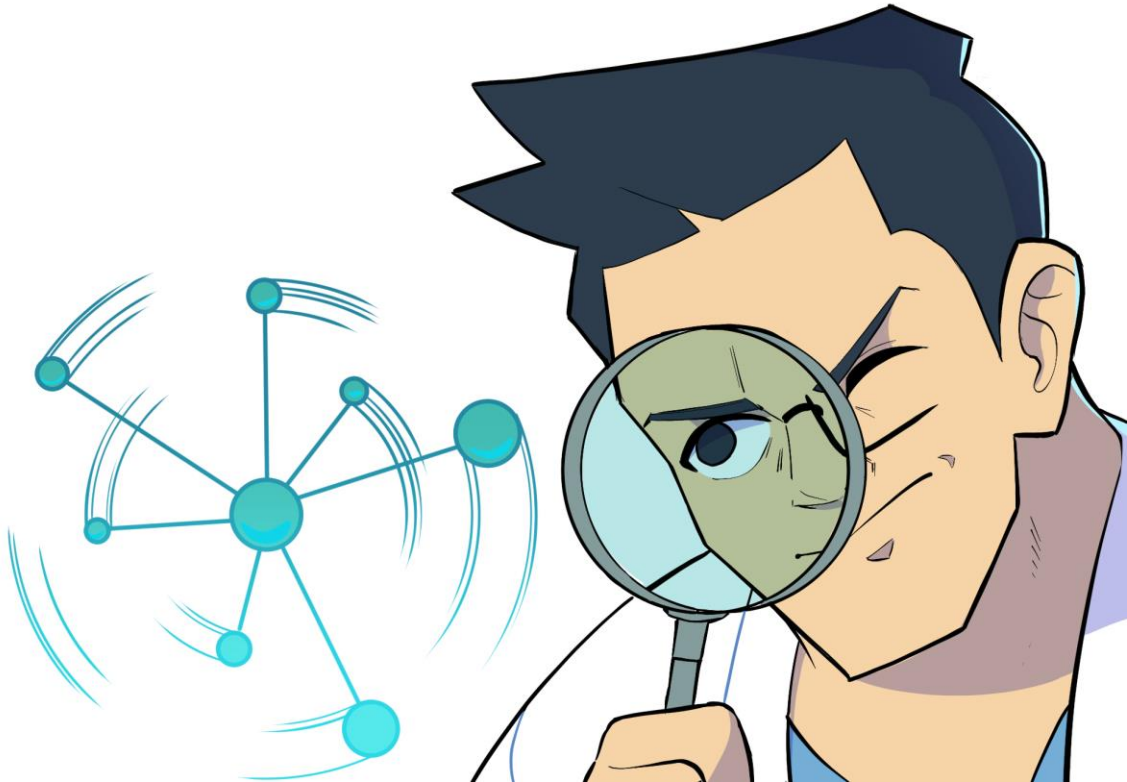
Definition

Micro-optics are optical systems that are between a few micrometers and a millimeters in size



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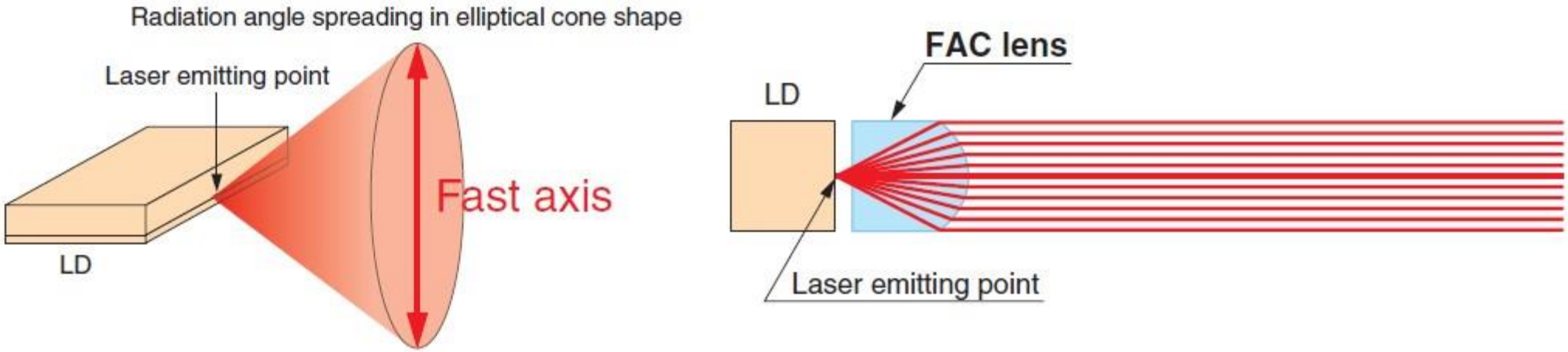
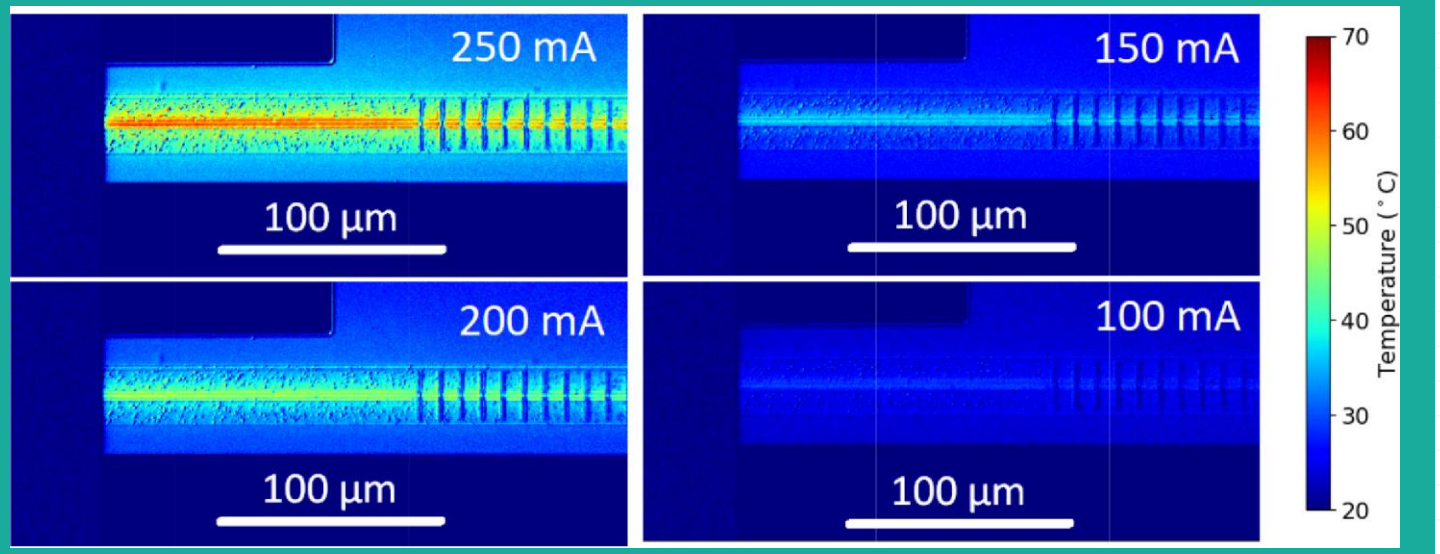
FAC lenses


Radiation angle spreading in elliptical cone shape
Laser emitting point
Fast axis
LD
FAC lens
LD
Laser emitting point

Where is the problem?



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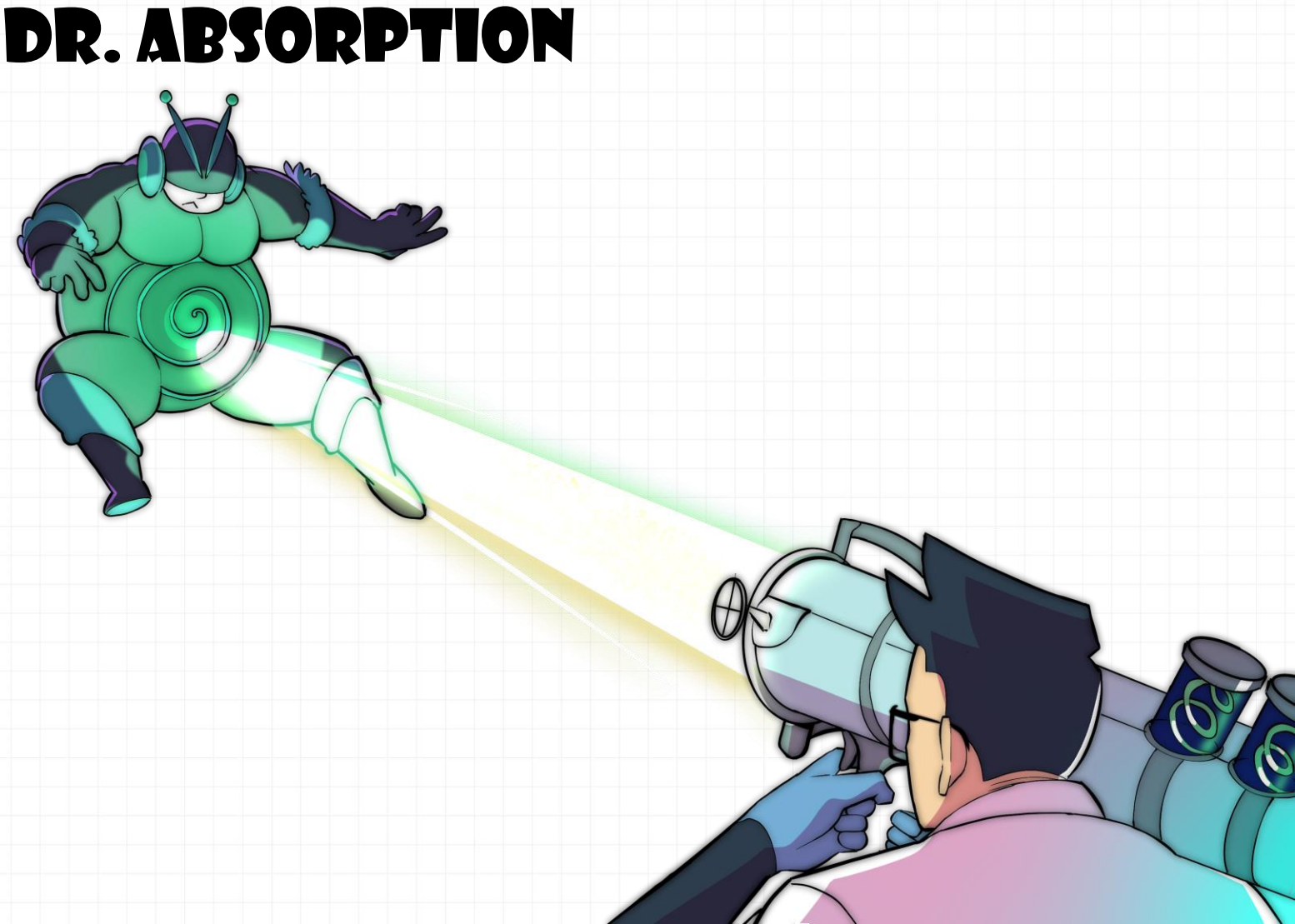
How can we deal with it?

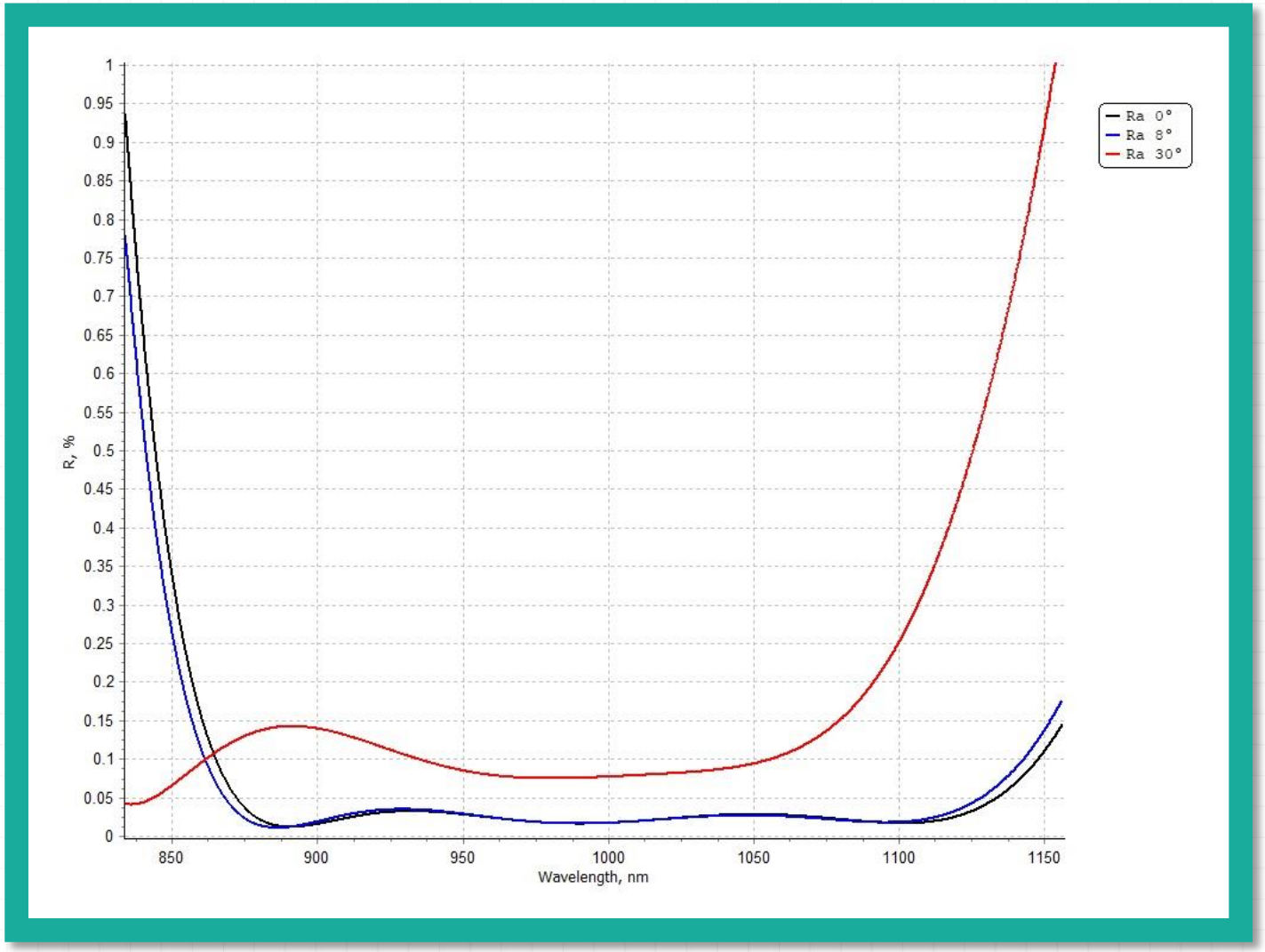


What can we do?

Coatings (IBS):

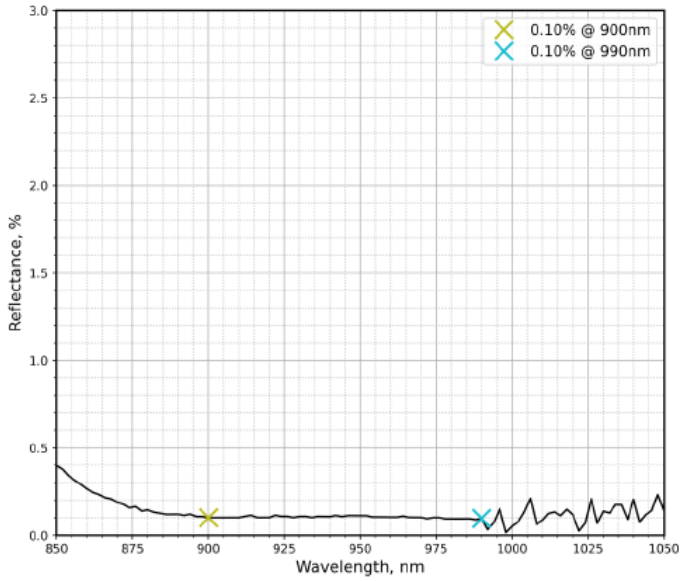
S1 (CX): Ra<0.1% 900 nm - 990 nm;
AOI= 0° to 8°
Ra<0.4% AOI= 0° to 30°
low absorption coating (<40ppm)

S2 (PL): Ra<0.1% 900 nm - 990 nm;
AOI= 0°to 8°
Ra<0.4% AOI= 0° to 30°
low absorption coating (<40ppm)



What can we do?

S1: (CX) Ra<0.1% 900 nm - 990 nm; AOI= 0° to 8° Ra<0.4% AOI= 0°to 30° low absorption coating (<40ppm)
S2: (PL) Ra<0.1% 900 nm - 990 nm; AOI= 0° to 8°



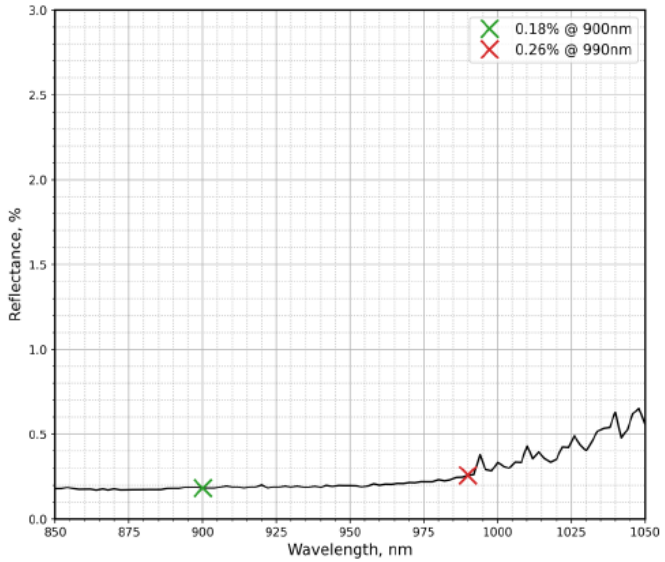
PO2967 Ra i8 S1

Fig. 1.

SIDE MEASURED: S1 only (grinded witness sample)

COMMENTS: Margin of measurement error: +/-0.25%

S1: (CX) Ra<0.1% 900 nm - 990 nm; AOI= 0° to 8° Ra<0.4% AOI= 0°to 30° low absorption coating (<40ppm)
S2: (PL) Ra<0.1% 900 nm - 990 nm; AOI= 0° to 8°



PO2967 Ra i30 S1

Fig. 2.

SIDE MEASURED: S1 only (grinded witness sample)

COMMENTS: Margin of measurement error: +/-0.25%

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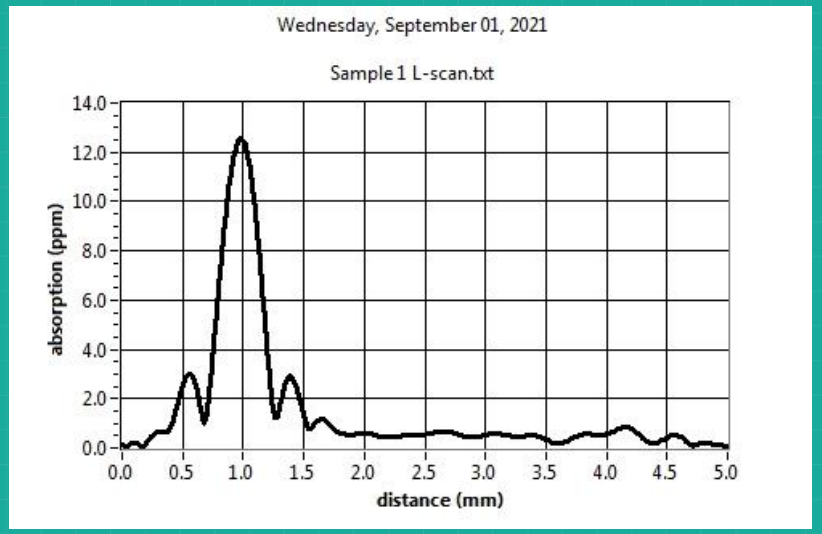
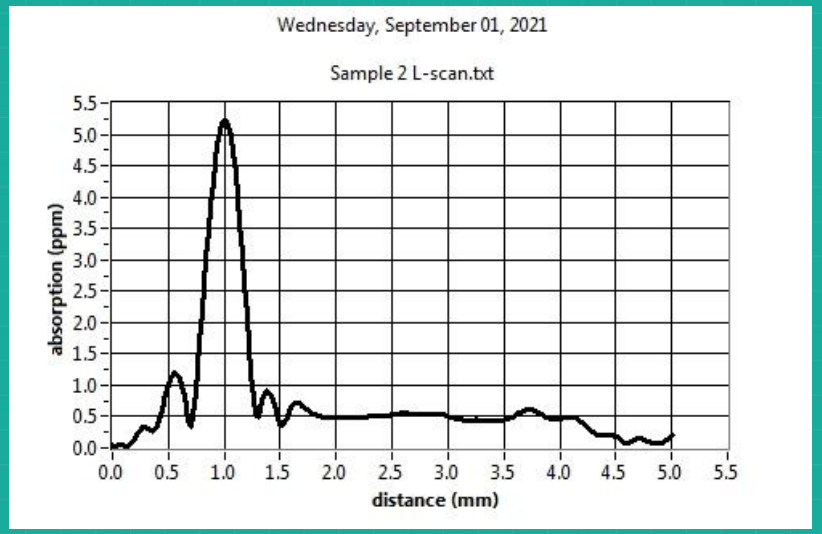
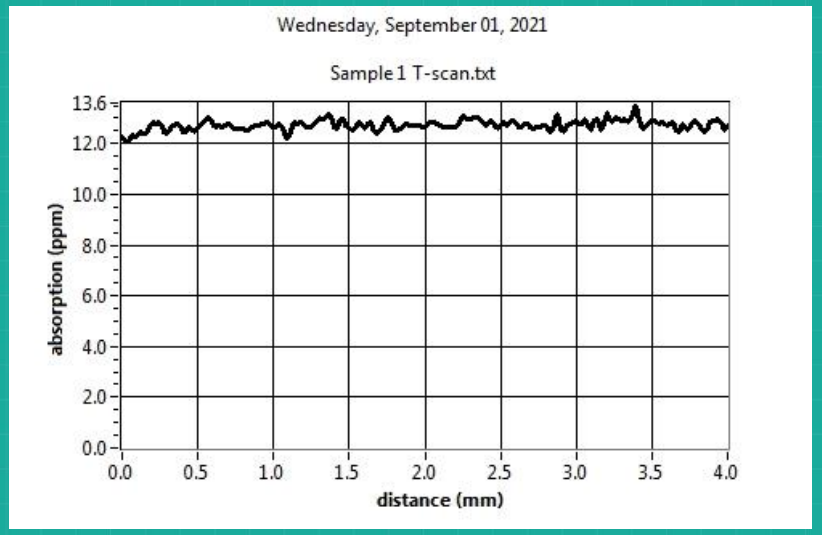


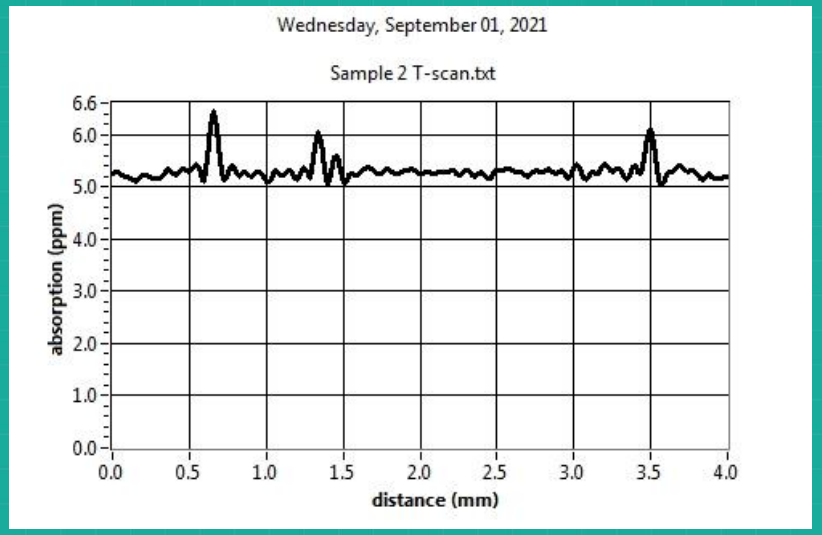
~12 ppm → too much heating

Some magic



7 ppm → ~5 degrees Celsius





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Conclusion

1. Laser diode technology advancements requires better coatings on collimating micro-optics
2. Optical coating performance is defined not only by reflection
3. Direct measurements always tells a full story

What OPTOMAN can do for EPIC members?

What EPIC members can do for OPTOMAN?

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