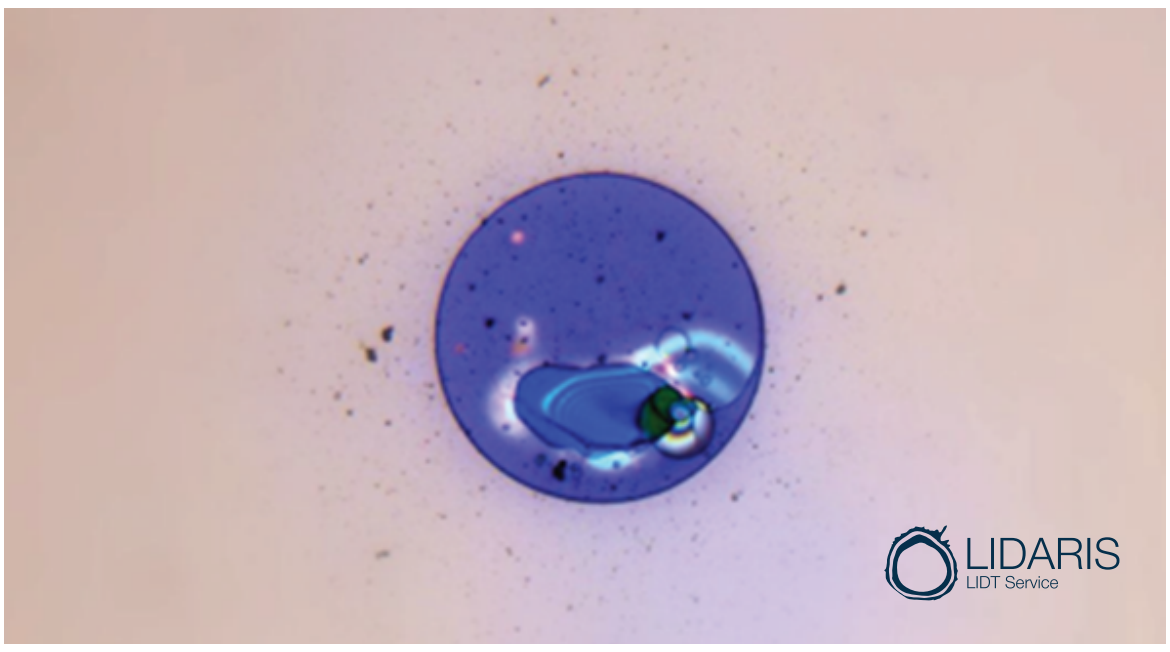
OPTICAL COMPONENTS FOR HIGH-POWER CW LASER SYSTEMS

ISSUE

Overheating of CW optical components under high-power irradiation that might lead to laser-induced damage.

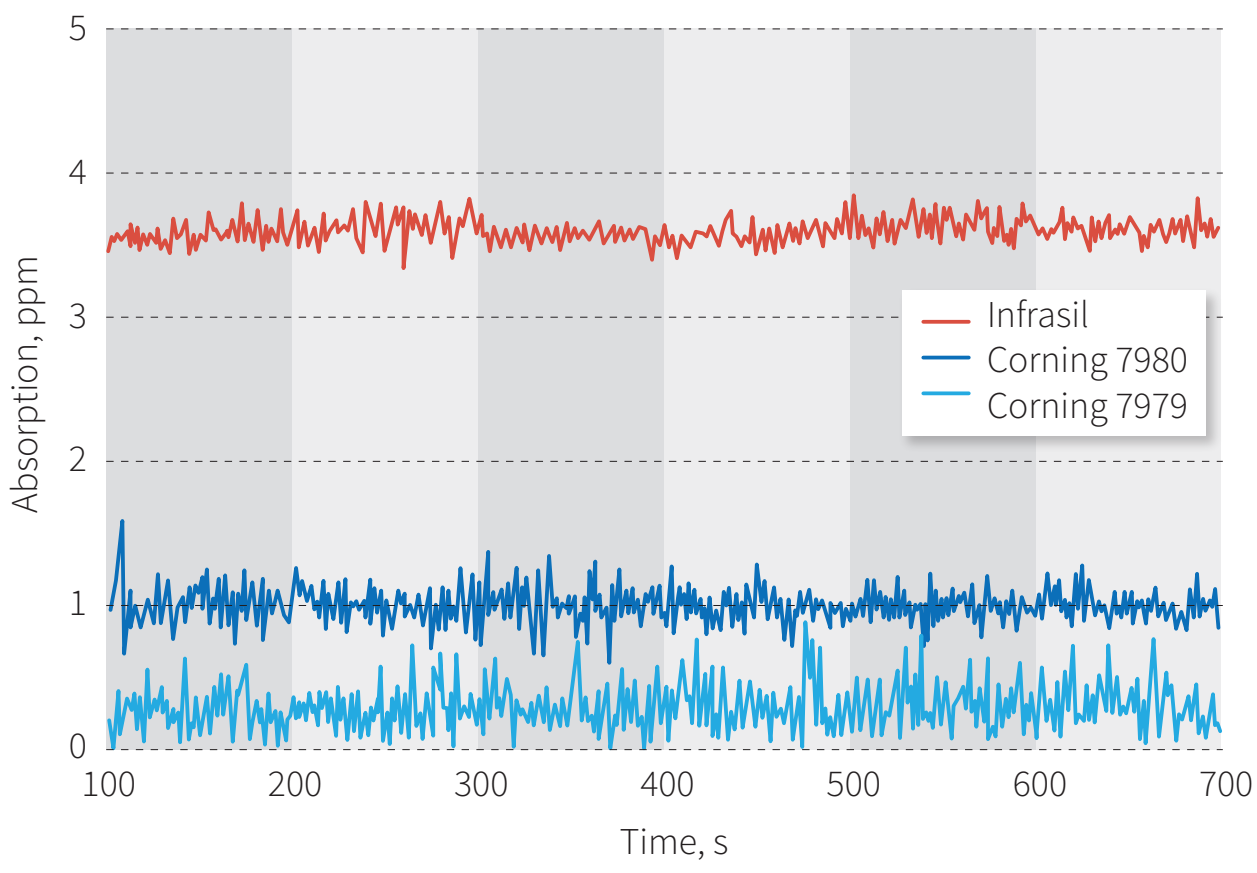
GOAL

To develop optimized manufacturing process to limit overheating and ensure laser-damage-resistant optical components for CW applications in the IR region.



SOLUTION FOR ANTIREFLECTIVE COATINGS

Right material choice + low-absorption coatings for transmissive optical components



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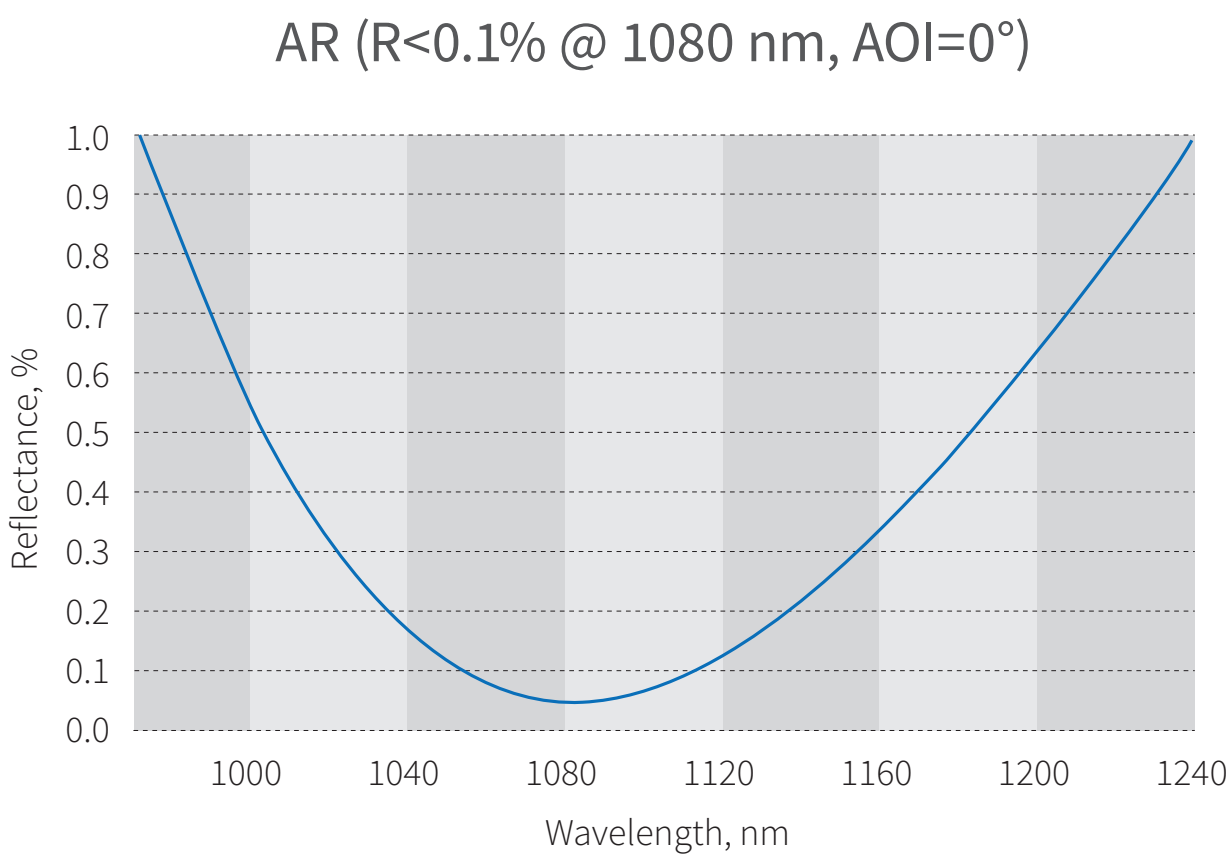
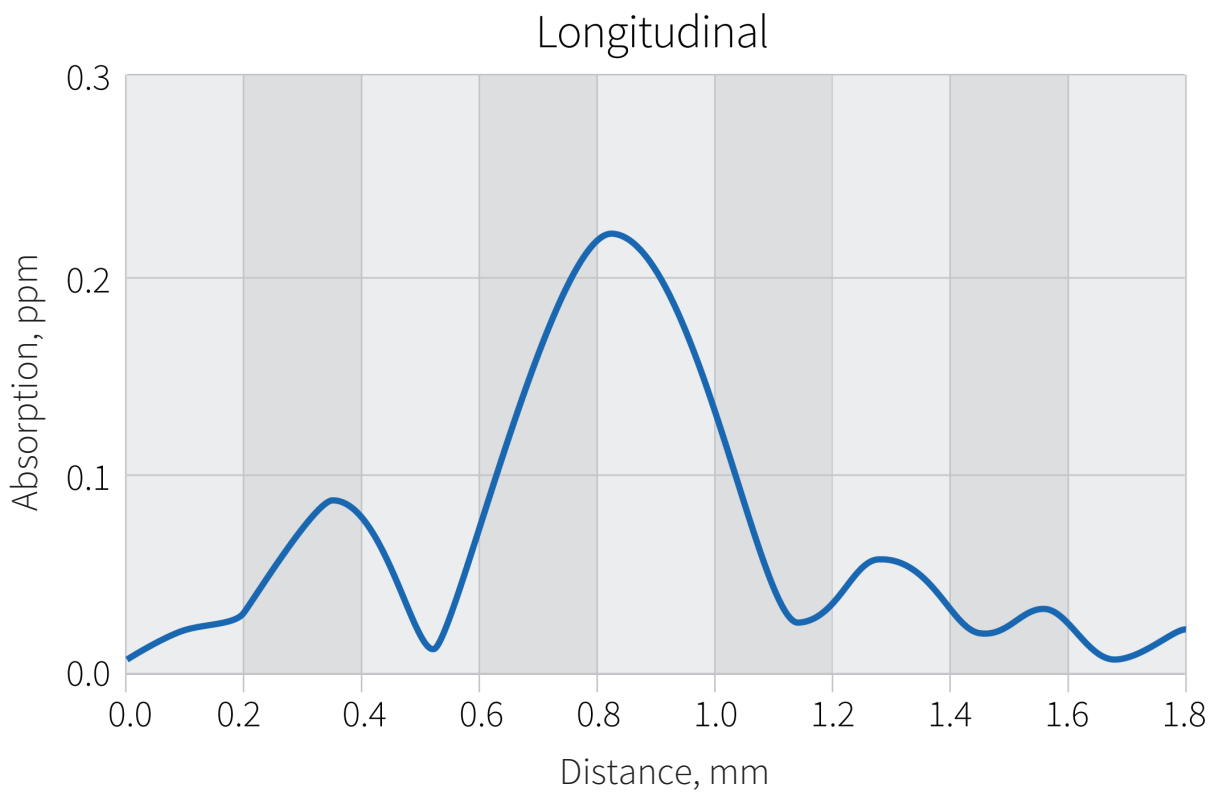
OPTICAL COMPONENTS FOR HIGH-POWER CW LASER SYSTEMS



PRACTICAL APPLICATIONS

<1 ppm fiber end caps for >100 kW CW IR laser systems



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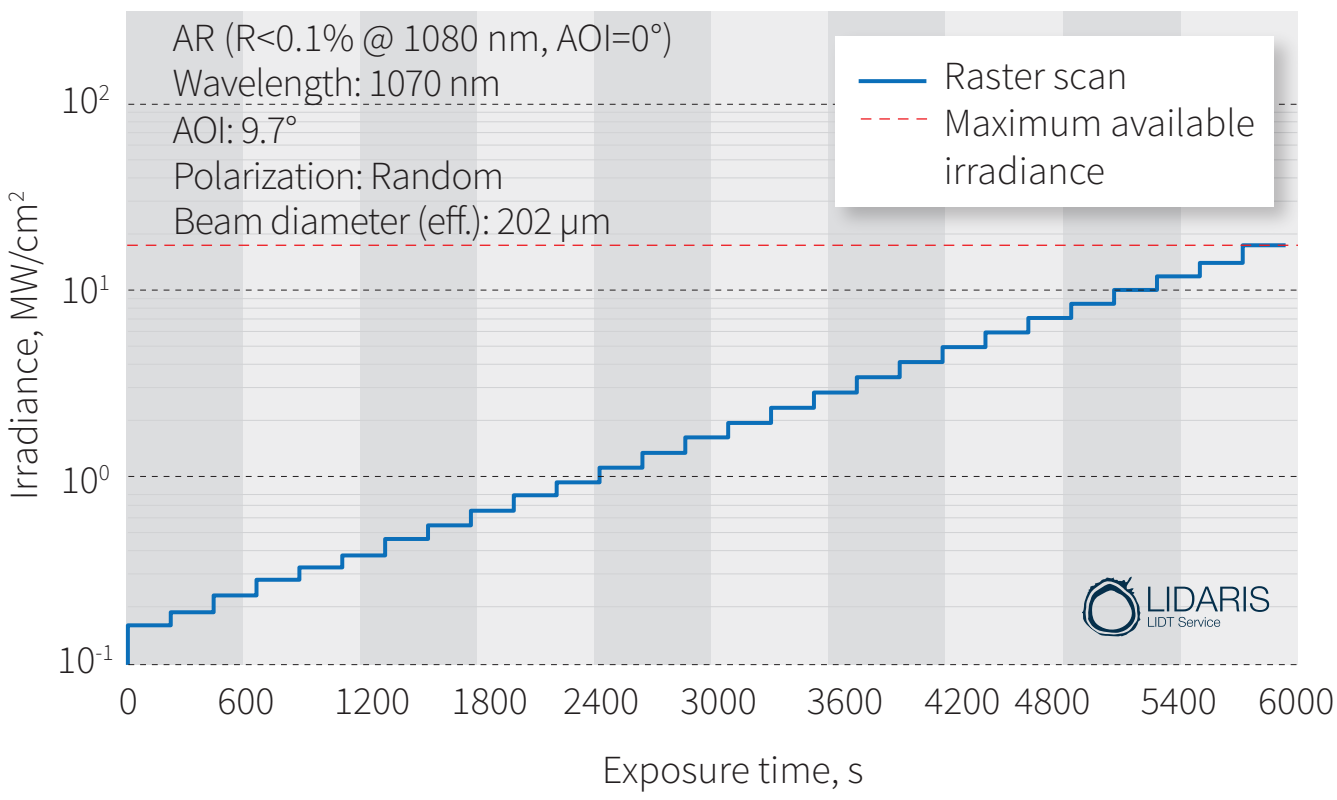
OPTICAL COMPONENTS FOR HIGH-POWER CW LASER SYSTEMS

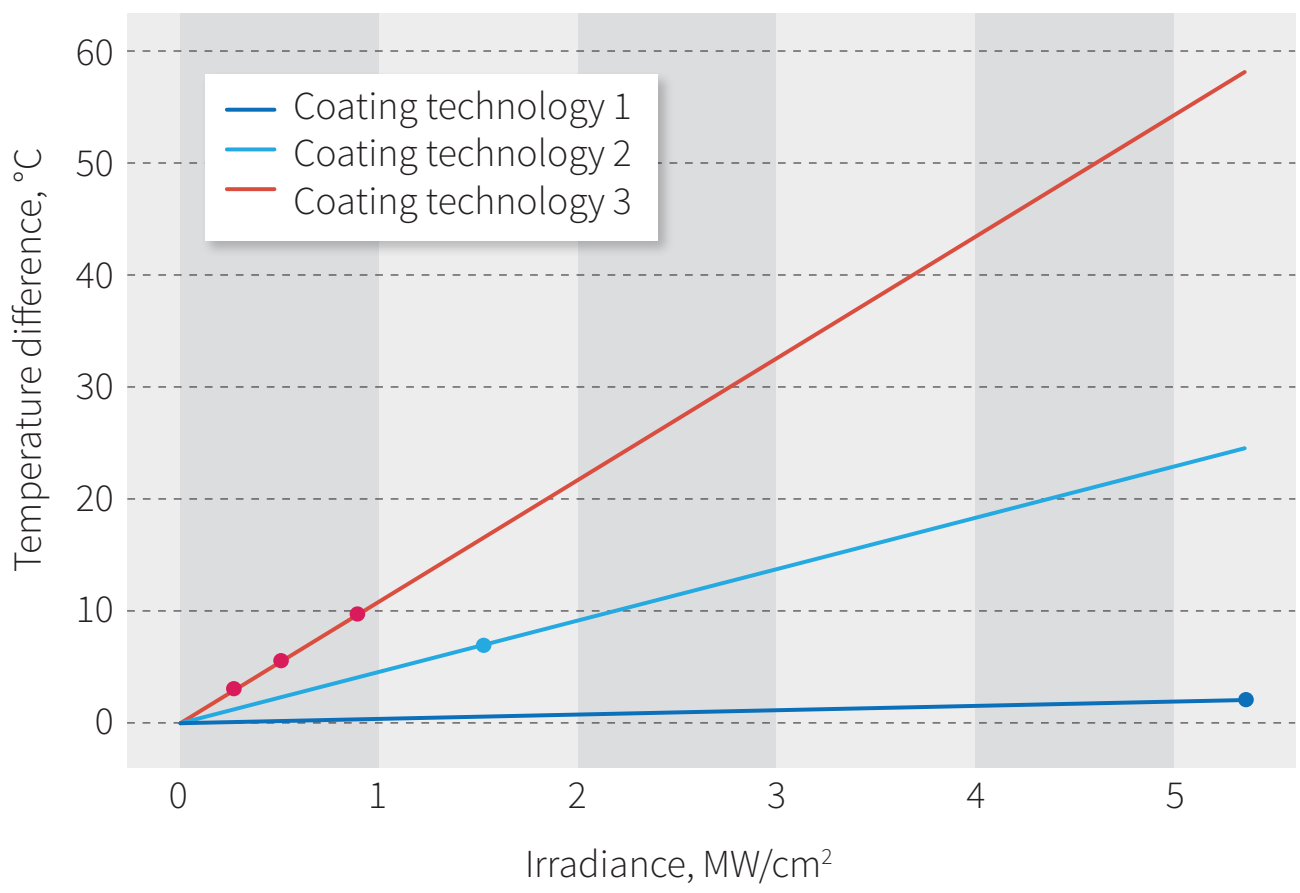
HIGH LIDT AR COATING FOR LASER-DAMAGE-SENSITIVE APPLICATIONS



SOLUTION FOR HR

Right coating technology choice for reflective optical components

HR (R>99.5% @ 1064-1070 nm, AOI=45°)



Comparison of surface temperature increase under IR irradiance of HR coatings manufactured using different coating technologies.

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OPTICAL COMPONENTS FOR HIGH-POWER CW LASER SYSTEMS

KEY TAKEAWAYS

Sub-ppm absorption AR coatings for **>100 kW** transmissive optics

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>17.4 MW/cm² laser-damage-resistant AR coatings

<3 ppm absorbing IR-optimized HR optics

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