Wednesday, June 11, 2025

PHOTONICS spectra®

WEBINARS

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Practical Aberration Correction Using Freeform Optics — Pushing the Boundaries of Laser System Performance

Thursday, June 12, 2025 10:00 AM - 11:00 AM EDT

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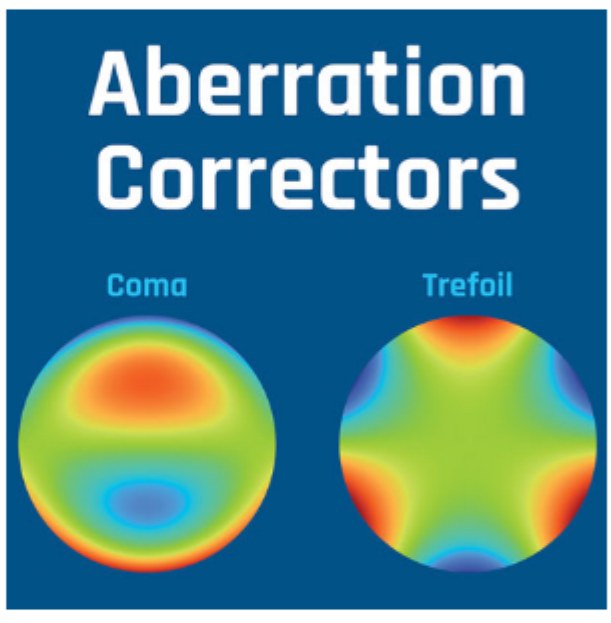
Presented by

PowerPhotonic
Enhancing Beam Performance

Many laser systems — whether they are for industrial, biomedical, or defense applications — are designed to create a well-defined output spot or beam; this is required for the laser process to be as efficient, productive, and effective as possible. Optical aberrations in the laser system (pointing, defocus, spherical, astigmatic, coma, etc.) come from a variety of sources and affect the extent to which the actual output spot (or beam) deviates from that of the design intent of the system. To compensate for aberrations, it is vital to make appropriate measurements of the aberrations, and then ideally represent them as Zernike coefficients. Then, it is possible to design a freeform surface — using refractive principles — as a freeform aberration compensator. If the freeform surface can be designed and manufactured with a fast turnaround, the aberration compensator can be regarded as an "in-build" solution. By making the freeform in fused silica using a precision direct write laser machining process, it demonstrates the manufacture and testing of aberration compensators that have extremely low scatter and low loss. These fused silica freeform aberration compensators can therefore be used in either extreme high-power applications, e.g., laser inertial fusion, or extremely sensitive low-light applications, e.g., fluorescence microscopy and cytometry. Presented by PowerPhotonic.



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- Tools for Analyzing, Controlling, and Simulating Biological Systems, 6/24/2025 1:00:00 PM EDT

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