Application of the IRIS Broadband Optical Monitoring Systems (BBM) from EssentOptics provides for significant improvement in quality indicators of complex multilayer optical coatings, including those with non-quarter-wavelength design and coatings with multiple control wavelengths (coatings for laser optical elements, broadband dichroic filter etc.).

The use of the IRIS monitoring system significantly increases the process yield and virtually eliminates the need for trial runs, even for new processes.

Excellent spectral resolution (up to 0.8 nm) and high signal-to-noise ratio (up to 5000:1) allows our customers to obtain the most error-sensitive multilayer coatings with unlimited number of layers.

Application of the AKRA Monochromatic Optical Monitoring System offers unparalleled opportunities to design and produce optical coatings covering the broadest wavelength range - from UV to IR. Sophisticated optical design and vast software features provide for radical reduction of the manual operations during the deposition processes.

The transition to the new system is easy and quick for coating engineers having experience with standard optical monitoring systems since the AKRA system also utilizes a monochromator as a spectrum separation element.

Accurate and real-time display of the changing transmission or reflection values is supported with the built-in unique ability to scan the entire spectrum after deposition of each layer. This feature significantly increases process and product yields and almost eliminates the need for trial runs.

The AKRA and IRIS systems offer fast and reliable process monitoring and ensure improved product yields, reduced production costs and increased repeatability even for the most challenging deposition runs.
**SHORTPASS FILTER**

Shortpass filter with more than 20 layers.

Target specifications:
- Cut-Off wavelength: 1550 nm
- Cut-Off tolerance: +/- 1%
- $T > 99\% @ 1530\ nm$
- $T_{\text{(rejection band)}} < 0.1\%$

Applicable product: IRIS

---

**BAND-PASS FILTER**

Band-pass filter optimized for 910 nm and composing of more than 30 layers.

Target specifications:
- $T_{\text{max}} \geq 98\% @ 910\ nm$
- FWHM $\leq 50\ nm$
- $T < 1\% (800 - 850\ nm)$
- $T < 1\% (990 - 1060\ nm)$

Applicable product: IRIS, AKRA

www.essentoptics.com
NARROWBAND DIELECTRIC MULTILAYER MIRROR

Target specifications:
\[ R_{\text{max}} \geq 80\% \text{ at } 650 \text{ nm} \]
\[ \text{FWHM} \leq 55 \text{ nm} \]

Applicable product: IRIS, AKRA

ANTIREFLECTION COATING AT TWO WAVELENGTHS

Antireflection coating effective at two wavelengths simultaneously in the visible region, 255 nm and 532 nm

Target specifications:
\[ R \leq 0.2\% \]

Applicable product: IRIS

www.essentoptics.com
**POLARIZER AT 56 DEG**

Thin film polarizer optimized for maximum efficiency at 1030 nm / 56 deg AOI.

Target specifications: Rs/Rp ratio > 100

Applicable product: IRIS, AKRA

**INTERFERENCE MIRROR AT TWO WAVELENGTH**

Multilayer interference mirror with specified performance at two wavelengths – 1064 nm and 1350 nm.

Target specifications: $R_{avg} > 99\%$ @ 45 deg AOI

Applicable product: IRIS
**IR LONGPASS FILTER**

IR longpass filter produced on Ge substrate, with broadband (8-14 μm) AR coating on the back side.

Target specifications:
- Cut-On wavelength: 7,6 μm
- Cut-On tolerance: +/- 0,15 μm
- T(passband) > 95% @ 8-12 μm
- T(passband) > 85% @ 12-14 μm
- T(rejection band) < 1%

**Applicable product: IRIS, AKRA**

---

**IR LONGPASS FILTER**

Mid-wave infrared longpass filter with broadband AR coating on the back side.

Target specifications:
- Cut-On wavelength: 2,95 μm
- Cut-On tolerance: +/- 0,02 μm
- T(passband) ≥ 95%

**Applicable product: IRIS, AKRA**

---

www.essentoptics.com
**BAND-PASS FILTER**

IR band-pass filter with 19 layers optimized at 4.78 μm. The Si/SiO layer stack is coated on sapphire substrate.

Target specifications:
- $T_{\text{max}} \geq 90\%$ @ 4.78 μm
- Tenth width (ZW) \(\leq 260\) nm

**NARROWBAND FILTER**

IR narrow band-pass filter for 3.3 μm center wavelength, having 11 layers of Si and SiO materials deposited on sapphire substrate.

Target specifications:
- $T_{\text{max}} > 90\%$ @ 3.3 μm

**Applicable product:** IRIS, AKRA

**Applicable product:** AKRA

www.essentoptics.com
Multilayer interference mirror at two wavelengths – 532 nm and 1064 nm. The thin film stack is designed for operation at 0 deg AOI.

Target specifications:
R ≥ 99% @ 1064 nm
R ≥ 98% @ 532 nm

Applicable product: IRIS