INFRARED OPTICAL ELEMENTS

Optimized Focus of the Infrared Beam

- Reflective, refractive, spherical and aspherical versions available
- Manufactured of highest quality materials for exceptional spectral integrity
- Customized designs to maximize your infrared performance
- Available proprietary coatings for optimum throughput and durability

Spectral Systems is a world leader in supplying spherical and aspherical custom optics for infrared spectroscopy, infrared imaging, and infrared warning, surveillance, and tracking systems. We use diamond turning and conventional techniques using a variety of infrared reflective and refractive materials.

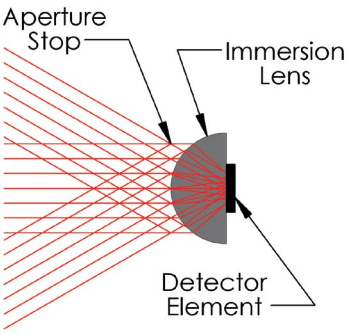
Our off axis reflective paraboloids and ellipsoids can be used to focus energy in broad spectral range applications. These reflective optical elements are manufactured to proprietary specifications for our customers and are therefore not included in this catalog. Our breadth of experience with design and manufacture of reflective optical elements can help you optimize your systems – please contact us to discuss your applications.

For refractive optical elements, we list here optical elements you can use for proof of concept in the design of your infrared systems. High refractive index materials are often used for lenses in the infrared and our proprietary Spectral Systems XP-BBAR™ coatings will provide maximum available energy throughput. This throughput advantage is particularly gained with infrared microscopy lenses.

Hemispherical Immersion Lenses

Immersion lenses are used to increase the numerical aperture or throughput of an optical system in non-focusing applications, i.e., systems where the radiation is not focused. The flat side of the lens is placed in contact with the detector. In this application, the energy on the detector is theoretically increased by a factor equal to the refractive index of the lens material. This gain is very large in the infrared because of the high refractive index of the infrared materials. The lens should be coated with our XP-BBAR to achieve this theoretical gain.

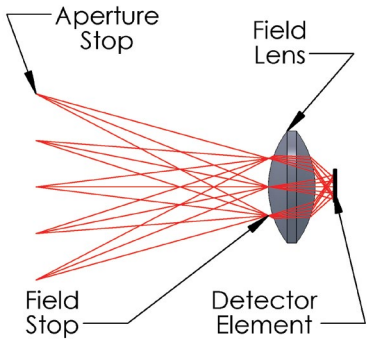
The major application of this lens in spectroscopic applications is in total reflectance measurements using an integrating sphere. Here the signal to noise ratio can be improved by a factor of 4 or more.



Application for Spectral Systems Immersion Lens

Field Lenses

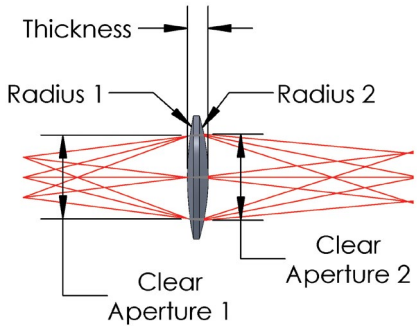
Field lenses are usually small lenses used to focus the beam of radiation onto the infrared detector. They can also make the response of the system more uniform over the field of view (FOV). If the lens is small it can be placed inside the dewar holding a mercury cadmium telluride (MCT) or other cooled detector. It can then also reduce background noise from radiation outside the spectral region of interest.



Application for Spectral Systems Field Lens

Medium Focus Medium Speed Lenses

These lenses are used in remote sensing spectroscopic measurements as wide field of view telescopic objectives or in laboratory spectrometers as sample compartment focusing lenses. They frequently are used in place of mirrors to reduce the overall size of the spectrometer.



Application for Spectral Systems Medium Focus Medium Speed Lens

ORDERING INFORMATION

Hemispherical Immersion Lenses

DESCRIPTION	PART NO.
6 mm diameter, R = 3 mm, ZnSe, XP-BBAR coated	998-0060C
10 mm diameter, R = 5 mm, ZnSe, XP-BBAR coated	998-0100C

Field Lenses

DESCRIPTION	PART NO.
6.35 mm diameter, F#1, ZnSe, XP-BBAR coated	575-0635C
12.7 mm diameter, F#1, ZnSe, XP-BBAR coated	575-1201C
25.4 mm diameter, F#1, ZnSe, XP-BBAR coated	575-2501C
12.7 mm diameter, F#1, Ge, XP-BBAR coated	540-1201C
25.4 mm diameter, F#1, Ge, XP-BBAR coated	540-2501C

Medium Focus Medium Speed Lenses

DESCRIPTION	PART NO.
12.7 mm diameter, F#3, ZnSe, XP-BBAR coated	575-1236C
25.4 mm diameter, F#3, ZnSe, XP-BBAR coated	575-2503C
12.7 mm diameter, F#3, Ge, XP-BBAR coated	540-1236C
25.4 mm diameter, F#3, Ge, XP-BBAR coated	540-2503C
50 mm diameter, 2.35" EFL, BaF_2	515-0235C
40 mm diameter, 4.88" EFL, BaF_2	515-0488C
50 mm diameter, 2.35" EFL, KBr, protective coated	545-0235C
40 mm diameter, 4.88" EFL, KBr, protective coated	545-0488C

For infrared optical elements not included in this list, please contact Spectral Systems.

Spectral Systems
PRECISION IN OPTICS

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