Coatings can significantly change the performance of your finished optical assembly. Ross Optical can recommend coating options that reduce the time, cost, and complexity of multi-element optical systems and subassemblies.

Coating Solutions from Ross Optical

- In-house coating for custom and standard lenses from 250 to 2400 nm in as few as 3 days
- Full range of coatings down to 220 nm, such as broadband anti-reflection, single wavelength AR, Rmax, beam splitters and more
- Infrared coating services between 2 and 12 microns, on substrates including germanium, silicon and other IR materials

Penn Optical Coatings, an ITAR registered company, has developed military grade coatings using a range of established and new coating materials to optimize optical system performance.

10 Ways Coating Advancements Can Improve Optical System Performance

1. More Layers
Recent advancements have allowed for much greater layer complexity compared to 20-25 years ago. The standard 5-6 layers for anti-reflective coatings is now 10-11. While 20 layers used to be the maximum, coaters can now achieve 100+ layers (Penn Optical Coatings, a partner of Ross Optical, covers up to 120).

2. Extended Wavelengths
Today’s optical coaters are able to reach wider ranges of wavelengths. For the visible spectrum, 400-700 nm was standard; now 350-1200 nm or 350-1800 nm is attainable.

3. More Applications
Applications in different sets of wavelengths used to require different coatings. Now coaters can make one coating work for multiple applications, which reduces inventory costs and supply chain complexity.

4. Greater Precision
Suppliers with optical design and engineering expertise can help their customers achieve ever-tightener tolerances for higher precision optics.

5. Special Sizes
Demand is increasing for both large optics and micro optics, and coaters must be able to accommodate these variable-size lenses. Penn can coat optics up to 1 meter and down to 1 mm in diameter. Ross is able to coat to the edge even on the smallest micro optics.

6. New Materials
Increasing demand for coatings operating in the range 2–6 microns waveband requires processes and designs optimized for many infrared substrate materials, including Silicon, Germanium, Calcium Fluoride, Zinc Selenide, and Zinc Sulfide. Penn has developed many military grade coatings for these applications using established and new coating materials to optimize performance.

7. Coatings that Do More
Coatings today can do more than block or pass light. A growing number of customers are requesting electrically conductive ITO coatings for use in applications ranging from avionics to medical equipment.

8. Flat Surfaces
Particularly with large optics, it can be difficult to achieve uniformity across the part surface. Penn has developed processes that produce uniform dielectric coatings across flat surfaces up to 30" in diameter.

9. Tooling
Advanced knowledge of tooling design and best practices can improve the overall quality of optical components and, in many custom projects, provide 100% coverage of coated surfaces. Penn has established techniques for designing high-performance tooling. Penn also carries a large, comprehensive inventory of tooling, in many cases saving customers the added expense of paying for new tooling.

10. Quality Inspection
Avoiding damage to the optical surface during cleaning and assessment is both a common challenge and a key necessity. Ross has developed clear guidelines for properly cleaning optics, and both Ross and Penn have rigorous inspection processes.

To discuss how Ross Optical’s coating solutions can improve optical performance for your application, contact sales@rossoptical.com or (915) 595-5417.