

## SPECIFICATIONS FOR ORDERING INTERFERENCE COATINGS ON FIBER TIPS

Omega Optical offers a variety of coatings on fiber tips — including full/partial reflectors, long pass, short pass, band pass, and antireflection designs. The performance of interference coatings depends on the angle-of-incidence (AOI), and that fibers present a distribution of AOIs to the coated tip. Further, Omega's coated tips are hard oxides and can be easily connected to other fibers such that the filters are immersed in a glass-filter-glass configuration. The numerical aperture (NA) of the chosen fiber, and how the fiber is connected in an application, will influence filter performance. As a result, we request that customers populate the following checklist to help us meet the goals of a given application. All entries, including questions and incomplete entries, are welcome.

### Filter Characteristics<sup>1</sup>

(circle one) LP SP BP Reflector (full or partial)

Cut-on \_\_\_\_\_ + \_\_\_\_\_

Cut-off \_\_\_\_\_ + \_\_\_\_\_

%T (peak) \_\_\_\_\_ + \_\_\_\_\_

Attenuation  $\lambda$  range \_\_\_\_\_

Attenuation OD \_\_\_\_\_

%R (peak) \_\_\_\_\_ + \_\_\_\_\_

%R  $\lambda$  range \_\_\_\_\_

### Fiber Configuration

\_\_\_\_\_ Coated tip operating in air

\_\_\_\_\_ Coated tip connected to an uncoated tip

Number of expected connections and  
disconnections \_\_\_\_\_

Number of fibers to be coated \_\_\_\_\_

Fiber supplier \_\_\_\_\_

\_\_\_\_\_

### Fiber Characteristics<sup>2</sup>

Numerical aperture (NA) \_\_\_\_\_

Core diameter \_\_\_\_\_

Clad diameter \_\_\_\_\_

Fiber length \_\_\_\_\_

(circle one) Single mode or Multimode at the  
operational wavelength

Degree of mode filling (if known) \_\_\_\_\_

Maximum temperature of jacket \_\_\_\_\_

Other (PMF, micro-structures, etc.)  
\_\_\_\_\_

### Fiber Tip Characteristics<sup>3</sup>

First end connector (FC, SC, LC, SMA, None)

Second end connector (FC, SC, LC, SMA, None)

If no connector (cleaved, lensed, polished bare  
ferrule)

Which end(s) are to be coated \_\_\_\_\_

### Notes

- 1 Steep spectral edges and rigorous blocking specifications lead to designs with high physical thickness. We have found that fiber tips can support up to about 30 microns of material. Thick coatings can allow core to clad leakage. Omega will advise customers regarding thickness of a proposed filter.
- 2 Multimode fiber with high NA leads to high AOI. High AOI causes any interference filter to blue shift. The observed spectral performance will be a weighted average of the performance at each angle. These spectral shifts can be both modeled and measured at Omega.
- 3 Near zero blue shifts occur if a single mode tip is coated to another single mode tip. This number of fibers allowed in one deposition depends on the fiber configuration (connectorized, cleaved, bundled, etc).