

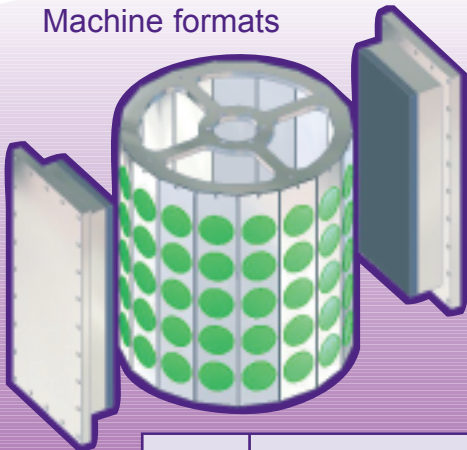
## Breakthrough Sputtering Technology

The patented "closed field" magnetron sputtering process used by Applied Multilayers is the most advanced yet devised.

It achieves high deposition rates by operating near to "metal mode", but unlike other reactive sputtering processes, the reaction occurs all the way round the rotating vertical drum without the need for a separate ion or plasma source. This makes the process simpler and much more reliable. The process works equally well for oxides, nitrides and pure metals.

- Pulsed dc power for high deposition rates
- Low temperature deposition ideal for polymer and glass substrates
- Thickness control to  $\pm 1\%$  with simple deposition time control
- Choice of machine sizes for applications and budgets
- Automated shutter for target conditioning and fine interface control
- Modern diagnostics and comprehensive data logging
- Interface to "Essential MacLeod" for "design 'n' coat"

### Machine formats



CFM450	Linear magnetron length 400mm Drum diameter 250mm
CFM650	Linear magnetron length 600mm Drum diameter 400mm
CFM850	Linear magnetron length 1m Drum diameter 530mm

## Options

- Turbomolecular pumping
- Optical monitoring
- Meissner trap for fast pump-down and water removal
- Re-circulating chiller for system cooling
- Customised substrate fixturing
- Flip-tooling for coating both sides
- Customised drum diameters and magnetron lengths for special coating applications
- Hydrophobic coatings

### Process support

Applied Multilayers has unique capability in optical coating design and process development. We can offer a full process development service as well as pre-production coating services.

### Warranty

The CFM series of optical coaters are all supported with a comprehensive one-year warranty on parts and labour.

### Training

Applied Multilayers provides training at its facility in the US. Further training is given on-site after installation and commissioning.

### Maintenance

Applied Multilayers supports the CFM series of optical coating equipment with a comprehensive product support programme and on-site preventative maintenance contracts. This assures the user of continuous trouble free use and timely replacement of targets, process gases and other consumables. Each CFM system is equipped with modern support for telephone updates and troubleshooting from the factory.

### Contact

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## CFM Optical Coating Systems



**Cutting edge reactive  
sputtering technology**

[www.applied-multilayers.com](http://www.applied-multilayers.com)

## Outstanding Optical Properties

The CFM process works with all the materials likely to be used in modern optical coatings. The optical properties for all these materials are outstanding. All the metal-oxides are stoichiometric with minimum absorption.

- Process ideal for pure metals, metal oxides or nitrides
- Smooth, dense, low absorption and spectrally stable coatings
- Low stress coatings
- Outstanding optical properties for the whole range of optical materials including  $\text{SiO}_2$ ,  $\text{TiO}_2$ ,  $\text{ZrO}_2$ ,  $\text{HfO}_2$ ,  $\text{Ta}_2\text{O}_5$ ,  $\text{Nb}_2\text{O}_5$ ,  $\text{ZnO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Si}_3\text{N}_4$  and ITO
- Co-deposition for alloy-oxides for rugate filters.
- Intermediate refractive indices with Oxy-Nitrides

## Applications

The CFM process allows single or multilayer coatings to be deposited automatically. Because the deposition rates are stable, layer thickness is controlled simply using time. The systems are flexible allowing the User to switch between coatings by simply scrolling to a new recipe in the computer control. New recipes can be downloaded from the factory by modem.

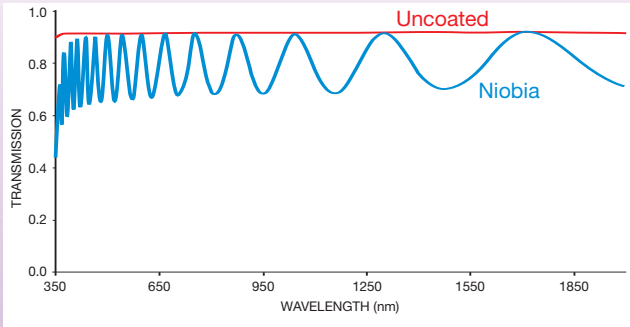
- Anti-reflection coatings on glass and plastic (CR39 and polycarbonate)
- Spectral/ thermal control coatings for lighting
- EMI/ anti-reflection coatings for display usage on handheld devices
- Colour separation filters for LCD projection systems
- Filters for sensors/ instrumentation applications
- Exceptional quality ITO for displays on glass or plastic

## Hydrophobic coating



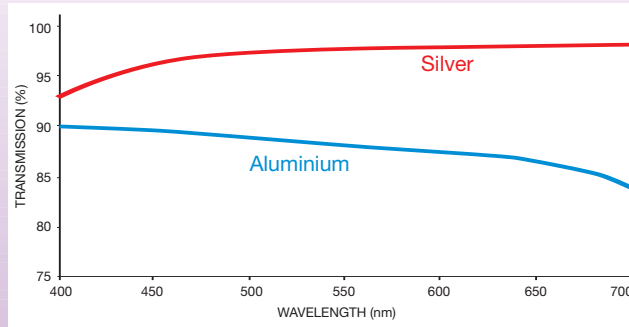
Hydrophobic coatings form an ideal “easy-to-clean” topcoat for consumer applications. This optical micrograph showing the water contact angle  $> 110^\circ$  on a hydrophobic coated lens surface.

## Low Absorption



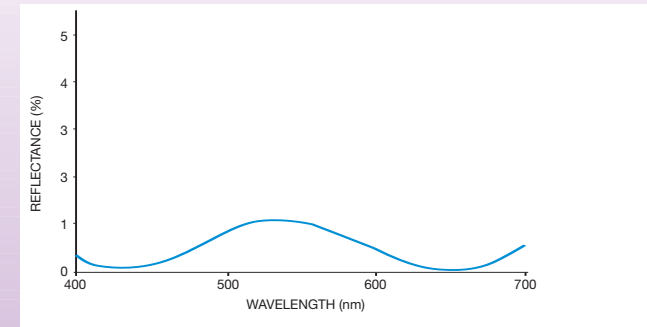
The transmission of a thick (1.5 $\mu\text{m}$ ) Niobia Film showing exceptionally low absorption

## Metal Reflectors



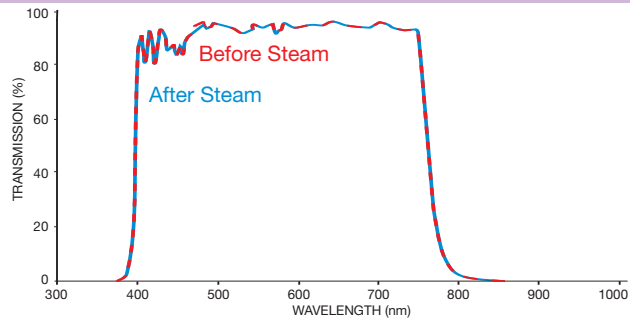
Reflection from single layer Silver and Aluminium coated Polycarbonate high brightness LED collimators.

## Anti-reflection coating



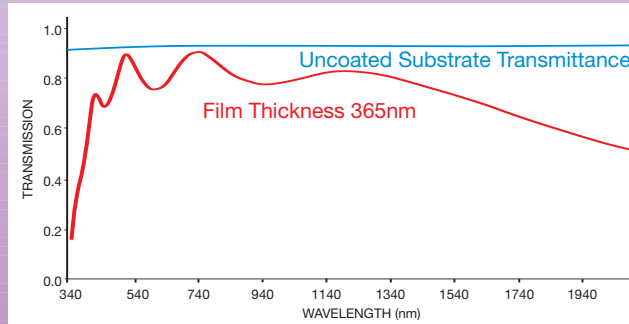
An Anti-reflection (AR) coating achieved using a 4-layer  $\text{SiO}_2$  and  $\text{Nb}_2\text{O}_5$  design.

## Dense, smooth and spectrally stable



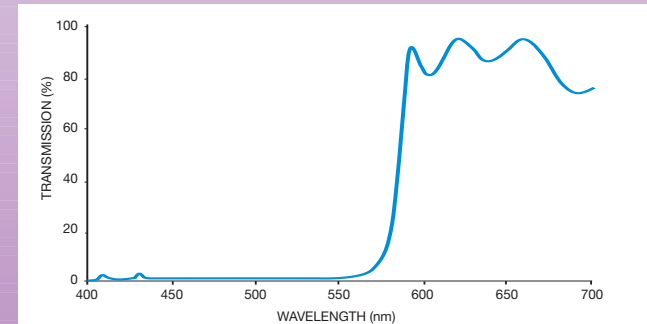
Data showing the transmission of a 36 layer UV/ IR blocker filter before and after exposure to supersaturated steam for 1 hour.

## Indium Tin Oxide



The CFM process produces exceptionally smooth and low absorbing ITO ideal for demanding display applications.

## Lighting Filter



The transmission of a 30 layer lighting filter used in retail merchandising.