

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.

- Totally automated, stable, arc-free process
- Pulsed dc power for high deposition rates
- Low temperature deposition ideal for polymer and glass substrates
- Optimal ion energy/ high ion current density plasma assisted deposition
- 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
- Modem diagnostics and comprehensive data logging
- Interface to “Essential MacLeod” for “design ‘n’ coat”

Machine formats

CFM250	Linear magnetron length 400mm 1m Drum diameter 250mm
CFM400	Linear magnetron length 600mm Drum diameter 400mm
CFM550	Linear magnetron length Drum diameter 550mm

●●● Process support

Applied Multilayers has extensive 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 UK. 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 modem support for telephone updates and troubleshooting from the factory.

●●● Target materials

Target materials and other consumables are available ex-stock.



Contact

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CFM Optical Coating Systems



**Cutting edge reactive
sputtering technology**

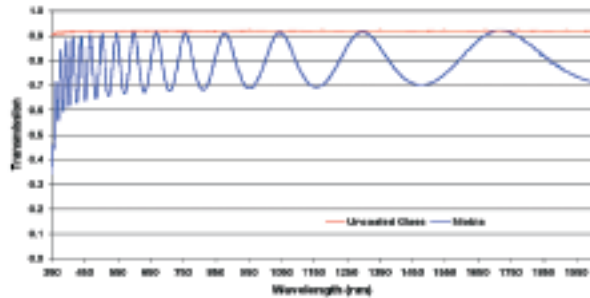
www.applied-multilayers.com

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. The CFM process can even be used to produce co-sputtered alloy materials or Oxy-Nitrides for intermediate refractive indices and rugates.

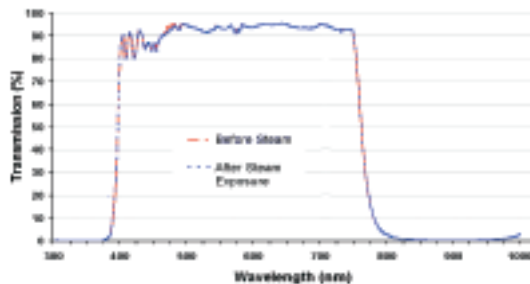
- Process ideal for pure metals, metal oxides or nitrides
- Dense, low absorption, spectrally stable coatings
- Exceptionally smooth coatings
- Low stress coatings
- Outstanding optical properties for the whole range of optical materials including SiO₂, TiO₂, ZrO₂, HfO₂, Ta₂O₅, Nb₂O₅, ZnO₂, Al₂O₃, Si₃N₄ and ITO
- Co-deposition for alloy-oxides for rugate filters.
- Intermediate refractive indices with Oxy-Nitrides

Low Absorption



The transmission of a thick (1.5um) Niobia Film showing exceptionally low absorption

Dense, smooth and spectrally stable



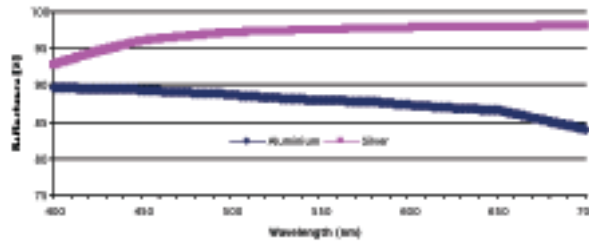
Data showing the transmission of a 36 layer UV/ IR blocker filter before and after exposure to supersaturated steam for 1 hour. The coating is stable indicating the coating is dense and porous free.

Applications

The CFM process allows single or multilayer coatings to be deposited automatically. Because the deposition rates are stable, layer thickness can be controlled simply using time. Optical monitoring is available for the most demanding applications. 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.

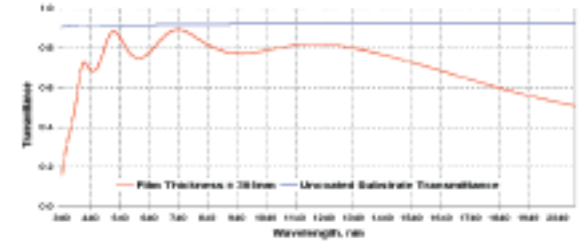
- Anti-reflection coatings on glass and plastic (CR39 and polycarbonate)
- Protected metal reflectors
- Spectral/ thermal control coatings for lighting
- CCD imaging anti-glare
- EMI/ anti-reflection coatings for display usage on handheld devices
- Colour separation filters for LCD projection systems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

Metal Reflectors



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

Indium Tin Oxide



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

Anti-reflection coating

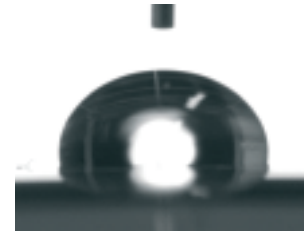
An Anti-reflection (AR) coating achieved using a 4-layer SiO₂/Nb₂O₅ design.

Lighting Filter

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

Hydrophobic coating

Hydrophobic coatings form an ideal "easy-to-clean" topcoat for consumer applications. This optical micrograph showing the water contact angle > 110° on a hydrophobic coated lens surface. The hydrophobic process is available as an option.



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