Plasma Assisted Reactive Magnetrons Sputtering

HELIOS – Bühler/Leybold Optics

The HELIOS machine is a physcial vapor deposition machine, well adapted to the fabrication of complex optical interference filters composed with a large number of thin layers (up to several hundreds assocuated with total thickness of several tens of microns). Wide range of optical functions such as bandpass, mirrors, antireflection, dichroïc... can be achieved with close to theoretical performances. Uniform and variable filters can be manufactured.

Technical specifications

- \circ 12 sample holders with 100 mm diameter
- Substrate holder palette rotating at 240 rd.min-1
- \circ Coating uniformity within ±0.5% over 100 mm diameter
- 4 distinct processing zones
 - 1 Plasma assistance source
 - 2 MF magnetron sputtering sources for dielectric materials deposition
 - 1DC magnetron sputtering source for metallic materials deposition
- Live in-situ optical monitoring of the depositions (transmission measurement)
- Available targets: Si, SiO₂, Nb₂O₅, HfO₂, Ta₂O₅, Ag, Cr, Al

Realizations

Example of realization of complex bandpass filters for space applications



Field of applications

The HELIOS deposition machine allows manufacturing complex optical filters with high performances for a wide range of applications including space, high power lasers, biology, medical, automotive, safety, luxury...











