

CLAIMS

1. A method of operation for a monitoring and deposition control system comprising: depositing a multilayer stack comprising alternating layers of molybdenum and silicon on a substrate; monitoring deposition of each molybdenum layer and each silicon layer for changes in a layer thickness of each silicon layer and each molybdenum layer during deposition; and adjusting deposition parameters based on the changes in the layer thickness of each silicon layer and each molybdenum layer during deposition, wherein each silicon layer and each molybdenum layer has a layer thickness having an error of 0.1 angstroms or less.
2. The method as claimed in claim 1 further comprising: detecting an error in a layer; generating an alert based on the error in the layer; and discarding the substrate and the layer based on the alert.
3. The method as claimed in claim 1 wherein monitoring deposition of each molybdenum layer and each silicon layer includes: generating a light output aimed at a layer; collecting the light output as reflected light off of the layer; and determining a spectrum of the reflected light for determining properties of the layer.
4. The method as claimed in claim 1 wherein monitoring deposition of each molybdenum layer and each silicon layer includes: generating a light output aimed at a layer; collecting the light output as reflected light off of the layer; determining a spectrum of the reflected light; and normalizing the spectrum of the reflected light to a wavelength average of the spectrum of the reflected light.
5. The method as claimed in claim 1 further comprising calibrating against a reference sample having a known spectral response before depositing each molybdenum layer and each silicon layer.
6. The method as claimed in claim 1 wherein monitoring deposition of each molybdenum layer and each silicon layer includes: generating a light output aimed at a layer and a reference fiber; collecting the light output from the reference fiber and as reflected light off of the layer; determining a spectrum of the reflected light and a spectrum of the light output from the reference fiber; and normalizing the spectrum of the reflected light to the spectrum of the light output from the reference fiber and to a wavelength average of the spectrum of the reflected light.
7. The method as claimed in claim 1 further comprising: providing a chuck for positioning the substrate; wherein monitoring deposition of each molybdenum layer and each silicon layer includes: determining if the substrate and a layer are tilted relative to a horizontal position; and adjusting the tilt of the substrate and the layer using a mechanism in the chuck.