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(54) Title: COATINGS, METHODS AND APPARATUS FOR REDUCING REFLECTION FROM OPTICAL SUBSTRATES

(57) Abstract

A method of coating optical substrates with anti-reflection (AR) coatings is described. The thickness and composition of the coating is determined by minimizing the product of the Fresnel reflection coefficients for a coating with the angular- and wavelength-dependent sensitivity of the human visual system to minimize the perceived reflectance for the coated article. A compact chamber is evacuated and flushed with chemically inert gas such as argon or nitrogen. One or more molecular precursors are deposited using plasma enhanced chemical vapor deposition (PECVD) to form AR films. Single-layer AR coatings based on fluoropolymer films of controlled thickness, as well as organic, organosilicon, and/or inorganic multilayers

are described. Also provided is a method for monitoring film growth optically, using a polarized, light-emitting diode, a polarizing optical filter, and a photodiode. Feedback from the monitor is used to control the precursor flow to produce single layers and multilayers with prescribed anti-reflection properties.

