

Abstract Submitted  
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**Antireflective Coatings using Layer by Layer Self Assembly of Silica and Titania Nanoparticles** ANITESH LAL, RAISA VELASCO CASTEDO, DAN MAZILU — Antireflective coatings have a wide range of applications and its usefulness can be found in devices such as cameras, binoculars, microscope lenses, solar panels etc. The major expectation for this research is to add an antireflective coating to a glass substrate which will reduce the reflectance and increase the transmittance of light of the substrate. From theory it is known that uncoated glass substrates transmit approximately 92% of light and reflect approximately 8% of it. However, if an antireflective coating is introduced on the surface of the substrate, there will be some light reflected from the first interface and some from the second interface. If these two reflected rays are made to interfere destructively, reflection can be minimized thus maximizing transmittance. We conducted various experiments with silica particles only in which we tried to change the properties of this antireflective coating such that maximum destructive interference could be achieved. Currently, we are working with a combination of silica and titania nanoparticles with varying thicknesses whereby layers have thickness of a quarter of the desired wave length. So far a number of different factor-level combinations have exhibited transmittance in excess of 96%, well above that of an untreated slide and comparable to commercial coatings.

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