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**Antireflective Coatings using Layer-by-Layer Self Assembly of Silica and Titania Nanoparticles**[1] RAISA VELASCO CASTEDO, ANITESH ANAND LAL, DAN MAZILU[2], Washington and Lee University — It is known that glass substrates (borosilicate glass) reflect about 4% of light at each air/glass interface and thus, they transmit only 92% of light. For some devices like camera lenses, it is important to maximize the amount of transmitted light. Previous research has demonstrated that it is possible to do so by adding antireflective coatings to the substrates. Our research aimed to deposit thin films on glass substrates that would minimize the reflectance of light and thus, maximize its transmittance. The thin films consisted of multiple alternating layers of silica and titania nanoparticles following the theory behind double-quarter periodic systems and were deposited on the substrates via the ISAM (ionically self-assembled monolayers) technique. Several experiments were conducted in order to investigate the factors that affected the quality of the coatings and some of the significant factors observed were the pH and the molarity of the silica, titania and PDDA solutions. A number of factor-level combinations yielded transmittances in excess of 96%, well above the value for uncoated substrates.

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