

Abstract Submitted
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Self-Assembled Double-Quarter Antireflective Coatings using Silica and Titania Nanoparticles ANITESH LAL, RAISA CASTEDO VELASCO, DAN MAZILU, Washington and Lee University — Antireflective coatings have a wide range of applications, from eyeglass and camera lenses, to solar panels and optoelectronic devices, to name just a few. Our study examines several factors that affect the quality of antireflective coatings created by the self-assembly of alternating layers of SiO₂ and/or TiO₂ nanoparticles and poly(diallyldimethylammonium chloride) polycation on glass substrates. We use a factorial design to investigate the effects of the molarity of the nanoparticle solution, the size of the nanoparticles, the pH of the nanoparticle and polycation solutions, and the number of nanoparticle-polycation bilayers on the optical properties of the films. The first order effects of these factors, as well as their interactions, on the reflectance, transmittance, and uniformity of the coatings are reported.

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