

## The fabrication of multilayer film based on layer-by-layer self-assembly method and its antireflective effect

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Anti-reflective (AR) films composed of low refractive and high refractive index layers were prepared using layer-by-layer (LbL) self-assembly (SA) method based on the electrostatic interactions. These double-layered AR films have the advantage of achieving the relatively high transmittance in broadband wavelength range in comparison of single layered AR films with low refractive index. In this study, we used the titanium(IV) bis(ammonium lactato)dihydroxide (TALH)/poly(diallyldimethylammonium chloride) (PDADMAC) multilayers for the formation of the high refractive index layers and the negatively charged silica colloidal particles for low refractive index layers, respectively. Furthermore, the respective refractive indices of TALH/PDADMAC multilayer and silica colloidal particle layer were controlled by the adsorbed amount, annealing temperature and solution pH for the preparation of optimized broadband AR films.