

Broadband Anti-Reflective Coatings with Graded Refractive Index on Plastic Optics

Philip Klement^{1,2}, Mario Zscherp^{1,2}, Henrik Spielvogel^{1,2}, Anja Henss^{2,3}, Sangam Chatterjee^{1,2}

1 Institute of Experimental Physics I, Justus Liebig University Giessen, Giessen, Germany

2 Center for Materials Research, Justus Liebig University Giessen, Giessen, Germany

3 Institute of Physical Chemistry, Justus Liebig University Giessen, Giessen, Germany

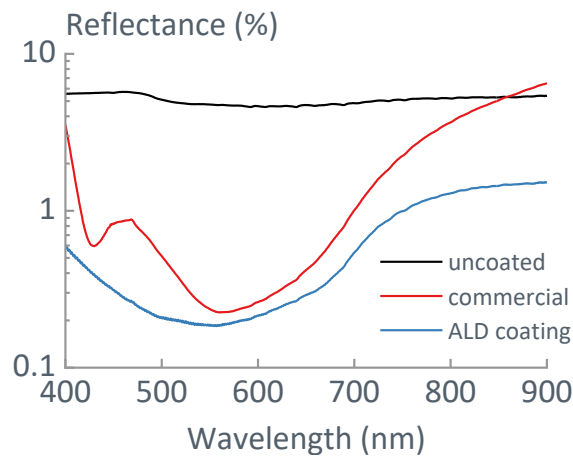


Figure 1: Residual reflectance of a graded refractive index anti-reflective (AR) coating by ALD compared to a commercial multilayer AR coating on a polycarbonate lens. The residual reflectance of the ALD AR coating is 0.3% in the visible range (400–900 nm) compared to 0.6% of the multilayer coating. Furthermore, the ALD coating is spectrally featureless.

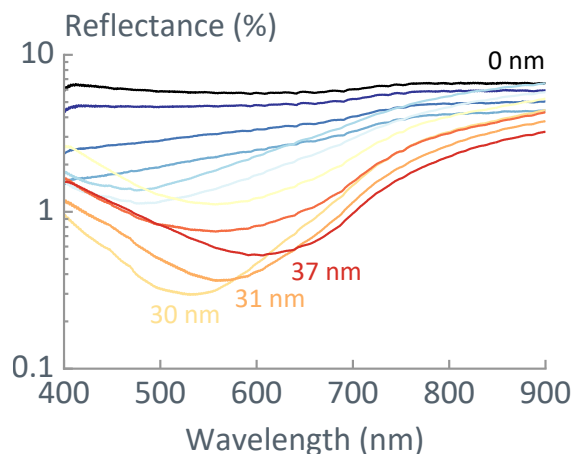


Figure 2: Residual reflectance of a graded refractive index anti-reflective coating by ALD as a function of the initial Al_2O_3 coating thickness on poly (methyl methacrylate). The residual reflectance depends critically on the coating thickness with a minimum of 0.3% at 532 nm for 30 nm coating thickness.