Basic spherical lens with the corrected spherical aberration by using linear axial gradient-index material

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Third-order and real aberration properties of linear axial gradient-index lenses with the corrected spherical aberration were studied. Linear axial gradients were introduced into homogeneous lenses designed with the minimum spherical aberration. Thus two types of the gradient-index lens with the corrected third-order spherical aberration were designed. One type of inhomogeneous lenses had axial gradient on the entire thickness of the lens, another one within a region of the first lens surface sag. Comparison of the third-order and the real aberrations of these two types of the gradient-index lens were discussed.

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