This study presents a new method for designing a triplet lens with one or two elements that are made of a gradient index medium (GRIN). This method is based upon considering a well known designed triplet lens (Cooke triplet lens) as a target lens. In this study, the new design of the triplet lens is called Hybrid Triplet Lens (HTL). The presented technique for designing the HTL is based upon keeping the total optical path length for the axial ray fixed for each case of design. In this study, several designs for the HTL which have the same total powers of the target lens are obtained. These designs are based upon the variation of the GRIN element parameter values, i.e., for positive and negative values. Also, several designs of HTL are obtained by altering the order of the GRIN element position in the system.

These HTL designs have been evaluated by considering several optical merit functions, i.e., RMS spot radius, wave front error and the spherical aberration. To achieve the optimal design, these functions are compared for the target lens and the HTL designs through a wide range of field angles.