

## **Prediction of negative index material lenses based on metallo-dielectric nanotubes**

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### **Abstract**

Abstract We propose to assemble negative index materials (NIMs) from dielectric nanotubes with inner and outer surfaces covered by thin metallic films. The focusing properties of flat and concave lenses assembled from metallized titania nanotubes are compared with those of lenses made from nanorods with the refractive index  $n = -1$  by performing numerical calculations using a multiple-scattering approach. Focusing is proved for both types of lenses, however, the focusing properties of concave lenses are better. The lenses are shown to be tolerant to the introduction of disorder in the arrangement of nanotubes. Moreover, the disorder proves to improve the quality of the focal spot.