



Exceptional integration of metal or semimetal nanowires in human-hair-like glass fiber

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<https://doi.org/10.1016/j.matlet.2010.06.002>

Abstract

We report on a technological route allowing one to integrate huge amounts of electrically isolated metal or semimetal (Pb/Sn alloys and Bi) nanowires in glass fibers with the diameter of up to a few hundreds of micrometers and the length reaching 1 m, the nanowires exhibiting a two-dimensional hexagonal distribution in the cross-sectional plane. The obtained results are indicative of new challenges for the elaboration of photonic crystals based on metallo-dielectric periodic and quasi-periodic structures.