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Title:Elliptical hollow core tube lattice fibers for terahertz applications

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Abstract:Hollow core microstructured fibers whose cladding is composed by an elliptical arrangement of circular dielectric tubes are numerically investigated. Birefringence, differential group delay, and polarization dependent loss are evaluated for different values of ellipticity in order to quantify its effect on the two polarizations of the fundamental core mode. All these parameters have a minimum at the center of each transmission window and they assume maximum values at the edges. In particular, the birefringence goes always to zero irrespective of ellipticity. This proves that tube lattice fibers are strongly immune against unwanted core shape deformation, in particular when the working frequency is close to the center of the transmission windows. On the other hand they are not suitable to obtain polarization maintaining fibers. © 2012 Elsevier Inc. All rights reserved.

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Controlled terms:Birefringence - Polarization - Polarization-maintaining fiber - Tubes (components)

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