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Title:A terahertz single-polarization single-mode photonic crystal fiber with a rectangular array of micro-holes in the core region

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Abstract: A single-polarization single-mode (SPSM) photonic crystal fiber with a rectangular array of micro-holes in the core region was designed in the terahertz frequency range near 1 THz. Based on the asymmetric arrangement of the micro-holes, birefringence between the fundamental x-polarized and y-polarized modes is introduced. A SPSM operation of the terahertz fiber can be supported due to the different mode indices of the x-polarized and y-polarized modes. The SPSM operation band is about 320 GHz with a central frequency of 1 THz. In addition, the proposed terahertz fiber also shows a good property of reduced propagation loss comparing with the dielectric absorption. © 2012 Elsevier B.V. All rights reserved.

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