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Title: Temperature influence on propagation characteristics of liquid crystal photonic crystal fiber of terahertz wave

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Abstract: Using the temperature sensitivity of refractive index of Liquid Crystal (LC), a new type of LC photonic crystal fiber (PCF) terahertz waveguide by temperature modulation is designed which is based on that the core of PCF is filled with nematic LC 5CB. The change of characteristics of modes of PCF with temperature under the conditions of different core radius is simulated. It is shown that there is no endless single mode. The waveguide dispersion of terahertz waveguide under the different temperature is simulated. It is shown that, the dispersion constant decreases with temperature increasing and the ultra-flattened dispersion is implemented.