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Abstract:Attenuation characteristics of hollowflexiblemetal and metal/dielectric coated polycarbonate waveguides were investigated using an optically pumped far infrared (FIR) laser at 215 μm. The bending loss of silver coated polycarbonate waveguides were measured as a function of various bending anglesbending radiiand bore diameters. Minimal propagation losses of 1.770.96 dB/m were achieved by coupling the lowest loss TE11 mode into the silver or gold coated waveguideand HE11 mode into the silver/polystyrene coated waveguides respectively. The maximal bending loss was found to be less than 1 dB/m for waveguides of 2 to 4.1 mm bore diameterswith a 6.4 cm bend radiusand up to 150 bending angle. The investigation shows the preservation of single laser mode in smaller bore waveguides even at greater bending angles. © 2012 Optical Society of America.
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