

Abstract Submitted
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Maximal Transmission with Dielectric/Metal Coated Hollow Flexible Terahertz Waveguides PALLAVI DORADLA, C.S. JOSEPH, JAYANT KUMAR, ROBERT H. GILES, University of Massachusetts Lowell, STL TEAM — Hollow, flexible, dielectric (Polystyrene), metal (Silver/Gold) coated polycarbonate waveguides have been designed and fabricated for maximal transmission of Terahertz radiation (THz). Attenuation characteristics of Terahertz radiation in metal coated waveguides with bore diameters 4.1mm, 3.2mm, 2 mm were studied at $215\mu\text{m}$ wavelength and the maximal transmission was obtained by coupling the lowest loss TE₁₁ mode from an optically pumped terahertz laser. Transmission loss can be reduced substantially by creating corrugation in metal coated waveguides and by coupling HE₁₁ mode into it. Minimal propagation loss of less than 1dB/m was achieved in metal coated waveguide with the addition of dielectric layer that causes corrugation. Polystyrene was chosen to be the dielectric, due to its lowest extinction coefficient, which enhances the transmission through the waveguide. The results will be presented during APS meeting.

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