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Characterization of Micromachined Air-lifted Terahertz Antenna Arrays CHANG LONG, LUYI YAN, CHEOLBOK KIM, University of Florida, DANIEL J. ARENAS, University of North Florida, YONG-KYU YOON, DAVID B. TANNER, University of Florida — We have designed and fabricated micromachined three dimensional (3-D) air-lifted monopole antenna arrays. The air-lifted antenna arrays have been fabricated using high-aspect-ratio epoxy structures defined by ultraviolet (UV) lithography and subsequent metallization by thin film metal sputtering. The uniqueness of this monopole antenna lies in its strong coupling to incident THz waves with E-field perpendicular to the substrate, which is not the case with most substrate-printed antennas. A Bruker 113v FTIR system has been used to characterize the fabricated arrays for both *s*- (E-field perpendicular to the plane of incidence) and *p*- (E-field parallel to the plane of incidence) polarized light over 30-600 cm^{-1}/1-20 THz. We measured monopole antenna arrays with diameters of 5 μm and different heights from 20 μm to 60 μm. Measurement results are compared to resonant frequency calculations and simulations. The results are in good agreement with those of the simulations.

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