Chengkuo Lee

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Biography

Chengkuo Lee received MSc. Degree in Materials Science and Engineering from National Tsing Hua University in 1991, and Industrial Science & System Engineering from Rutgers University, The State University of New Jersey in 1993, and Ph.D. degree in Precision Engineering from The University of Tokyo in 1996. He is currently an associate professor in the Department of Electrical and Computer Engineering, National University of Singapore. He has published more than 220 journal articles. His research interests cover mainly optical MEMS, nanophotonics, Power MEMS, and biomedical MEMS.

Presentation Title
Tunable THz Metamaterials Using MEMS Stressed Beam

Metamaterials are array of subwavelength structures that can be engineered to achieve exotic material properties that does not occur in nature. Active control of metamaterial response is highly critical for the realization of practical metamaterial applications. Microelectromechanical systems (MEMS) is the enabling technology to achieve tunable metamaterials. MEMS provides a wide palette of micro- and nano- scale actuators that can be integrated into the subwavelength structures to structural deformation and hence active control of metamaterial response. In our group, we explored the out-of-plane deformable, stress engineered microbeam as the active metamaterial element. The MEMS metamaterials based on CMOS compatible fabrication process allow for active control of wide range of electromagnetic properties in the terahertz region. We have proposed and demonstrated the enhanced controllability at unit cell level. The experimental demonstration of advanced control of slow light behavior, anisotropy and multifunctional metamaterials is reported.