Abstract Submitted
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Towards 3D and Multilayer Electromagnetic Metamaterials Structures in the THz Range[1] B. D. F. CASSE, Northeastern University, H. O. MOSER, J. W. LEE, S. INGLIS, M. BAHOU, L. K. JIAN, Singapore Synchrotron Light Source — V. G. Veselago predicted that left-handed materials would exhibit a plethora of unusual effects such as a negative index of refraction as used in Snell's law, a reverse Doppler and Čerenkov effect. This novel class of materials, following Pendry's recipes, can potentially restore evanescent waves to focus subwavelength details in an image. Micron-size electromagnetic metamaterials (EM^3) structures which exist so far were produced and characterized as single layer structures. Furthermore the structures were produced with a low yield. In the first part of the talk, we will present techniques for producing copious amount of EM^3 chips via the LIGA process using Synchrotron radiation and demonstrate assembly of the first multilayer THz EM^3 structures. The planar micro- or nanoEM^3 produced so far are also highly anisotropic. Recently, we proposed schemes to produce more isotropic structures, within the same matrix, via tilted X-ray exposures that were introduced in the LIGA process years ago. In the second part of the talk, we will show the results of microfabrication of nearly 3D EM^3 structures for the THz range.

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