

Abstract Submitted
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Nanofabricated materials with negative refractive indices at optical wavelengths WENSHAN CAI, School of Electrical and Computer Engineering, Purdue University, W. Lafayette, IN 47907, UDAY CHETTIAR, HSIAO-KUAN YUAN, VLADIMIR DRACHEV, ALEXANDER KILDISHEV, ANDREY SARYCHEV, VLADIMIR SHALAEV — The efforts to construct media exhibiting negative refraction have been extended to the optical range. In this work we present examples of structures with negative refraction at optical frequencies, including paired nanorods arrays and coupled metal strips. The negative refractive indices in such nanofabricated metamaterials result from plasmon resonances for both the electric and magnetic components of light at overlapping wavelength ranges. Simulations and experimental verification of the negative indices are demonstrated. The agreement between simulations and experimental data is excellent, confirming the validity of the proposed structures as negative index materials. Optimization of the parameters of the nanostructure is also discussed.

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