

Abstract Submitted
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Negative Refractive Index Materials AHMAD ALSAAD, Jordan University of Science and Technology, Physics Department, Irbid, Jordan, HEINZ SCHWEIZER, 4. Physikalisches Institut, Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart, MICRO STRUCTURE GROUP TEAM — The realization of dielectric and metallic periodical matrices in a bottom up fabrication procedure is proposed for realization of materials with negative refractive index (NIM) or pseudo NIM (PsNIM). The single elements of the periodical matrices (2D photonic crystal, 2D PC) will be realized by high-resolution e-beam lithography and dry etching technique. Dielectric materials will be used for PsNIM approaches. Special importance in the case of metallic matrices (for NIM approaches) will be put on structures in the nanometre region to control the surface plasmon modes. By stacking of the 2D PC structures we will realize the 3D PC in a bottom up procedure with special consideration of adjustment of matrix modes (PC gap frequencies) and surface plasmon modes to control and enhance the NIM-effect. Furthermore a stacking of many as possible layers in the bottom up procedure is important for the reduction of the surface leakage rate of the electromagnetic field out of the NIM structure. Optical measurements with high resolution and time resolved measurements will be carried out with partners in narrow co-operation.

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