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Binary Superimposed Gratings Formed by e-Beam Recording in Amorphous AsS Films

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Abstract

Binary unidirectional superimposed diffraction gratings with grating periods of 0.9 μm and 1 μm were formed in amorphous AsS films by e-beam recording. The influence of recording sequence of index superimposed gratings on their diffraction efficiency was evidenced. Enhancement of diffraction efficiencies of index superimposed gratings as compared to single gratings was revealed. Relief structures of superimposed gratings were fabricated by chemical etching. The surface relief modulation was studied by atomic force microscope. A beat period of 9 μm for relief complex structure was observed. The highest depth of relief modulation was about 70–80 μm .