

Orthogonal polarization dual-channel holographic memory in cationic ring-opening photopolymer

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Abstract: A dual-channel holographic recording technique and its corresponding memory scheme in the cationic ring-opening photopolymer are presented. In the dual-channel technique, a pair of holograms are recorded simultaneously with two orthogonal polarization channels in the common volume of the material, and are reconstructed concurrently with negligible inter-channel crosstalk. The grating strengths of these two channels are investigated and the relevant parameters for equal diffraction intensity readout are optimized. Combining the dual-channel technique with speckle shift multiplexing, a high-density holographic memory is realized. This dual-channel scheme enables the users to interact with the storage medium from an additional channel. The simultaneous nature of the two channels also offers a faster data transfer rate in both the recording and reading processes.

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