

DHD® CROP Holographic Storage Media for Advanced Optical Data Storage

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Abstract: Dynamic range (v_m) and recording sensitivity (S_R) are reported for co-locationally multiplexed holograms recorded in DCE Aprilis DHD™ holographic media utilizing the low shrinkage Cationic Ring-Opening Polymerization (CROP) chemistry. The advantages of the CROP method in combination with advanced molecular design of formulation components in the recording material achieves high performance for critical attributes for both binary data page and microhologram implementations. The microholographic approach to 3D optical data storage is based on writing and reading microlocalized reflection-type volume Bragg gratings in extremely small volume elements ($\sim 0.5 \mu\text{m}^3$) in multiples of layers thereby achieving large storage capacity in a thickness of $\sim 0.5\text{mm}$. The binary data page approach is based upon recording and reading multiplexed volume holograms of megapixel images throughout the thickness of the material, but in larger volume elements ($\sim 0.12 \text{mm}^3$) thereby achieving both large storage capacity and high data transfer rates in similar media thickness. ©2007 Optical Society of America

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