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# **HOLOGRAPHIC CHARACTERISTICS OF AN ACRYLAMIDE/BISACRYLAMIDE PHOTOPOLYMER IN LAYERS 40-1000 $\mu\text{m}$ THICK**

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In this study we analyze the holographic behaviour of an acrylamide/bisacrylamide photopolymer in layers that range in thickness from 40 to 1000 mm. The photopolymer is composed of acrylamide as the polymerizable monomer, N,N' methyl-ene-bisacrylamide as crosslinker, triethanolamine as radical generator, yellowish eosin as sensitizer and a matrix of polyvinyl alcohol. For each thickness we analyze the holographic behaviour of the material during recording of unslanted diffraction gratings using a continuous argon laser (514 nm) at an intensity of 5 mW/cm<sup>2</sup>. The response of the material is monitored in real time with an He-Ne laser. The composition and method of depositing the solution varies depending on the desired thickness of the final layer. Analysis of the main holographic parameters: maximum diffraction efficiency reached, energetic sensitivity and angular response enables a comparison to be made of the different thicknesses. It is seen that the thickness of the photopolymer layer depends on its composition and the results obtained for the different parameters evaluated vary considerably in each case. Therefore, the different potential applications of the material (fabrication of holographic optical elements, use as the recording material in holographic interferometry, or manufacture of holographic memories) depends on its thickness.

TOPICS + KEYWORDS: Holography, Optical Storage, Holographic recording materials, Photopolymers, Diffraction gratings.