

(57) **Abstract:** Embodiments of the present disclosure generally relate to the introduction of an encapsulation material into an optical device formed with a same thickness distribution at one or more eyepiece areas across a substrate. The target thickness distribution formed in at least each eyepiece area reduces variation of substrate thickness from substrate to substrate. Forming the target thickness distribution in the substrate and the index-matched layer with maskless patterning such as graytone lithography and inkjet printing eliminates subsequent processing steps to achieve the target thickness distribution. An encapsulation material between the optical device layer and the index-matched layer will protect the index-matched layer from damage.