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(54) **MOBILE CHARGE INDUCED PERIODIC POLING AND DEVICE**

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See application file for complete search history.

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(57) **ABSTRACT**

Devices and methods are disclosed for realizing a high quality bulk domain grating structure utilizing mobile charges that are generated by means of photo-excitation in a substrate. An effect of light exposure (UV, visible, or a combination of wavelengths) is to generate photo-induced charges. The application of a voltage across the substrate combined with the application of light exposure causes a photo-induced current to flow through the substrate. The photo-induced charges (behaving like virtual electrode inside the material) and the photo-induced current result in both reduction of the coercive field required for domain inversion in the material and improve realization of the domain inversion pattern, which previously has not been possible at room temperature.

49 Claims, 10 Drawing Sheets

