

Accepted Manuscript

Title: High focusing efficiency or high signal-to-noise ratio diffractive optical element for color separation and light focusing

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PII: S0030-4026(17)30295-4
DOI: <http://dx.doi.org/doi:10.1016/j.ijleo.2017.03.036>
Reference: IJLEO 58959

To appear in:

Received date: 15-8-2016
Accepted date: 13-3-2017

Please cite this article as: Jia Li, Wen-Qi Xu,, Jia-Sheng Ye, Peng Han, Wen-Feng Sun, Sheng-Fei Feng,, Xin-Ke Wang, Yan Zhang, High focusing efficiency or high signal-to-noise ratio diffractive optical element for color separation and light focusing, <![CDATA[Optik - International Journal for Light and Electron Optics]]> (2017), <http://dx.doi.org/10.1016/j.ijleo.2017.03.036>

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7 **High focusing efficiency or high signal-to-noise**
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10 **ratio diffractive optical element for color**
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12 **separation and light focusing**
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38 **Abstract**

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41 Diffractive optical elements (DOEs) are designed by the simulated annealing method
42 for simultaneously implementing color separation and light focusing (CSLF) func-
43 tions. Through changing the maximum permitted phase, the quantization level num-
44 ber, the input pixel number or the target focusing region width, various CSLF DOEs
45 are optimally designed. Optical performances of the designed DOEs are calculated
46 by the Fresnel diffraction integral method. Simulation results reveal that the de-
47 signed DOEs not only successfully realize the expected CSLF functions, but also
48 exhibit an excellent performance of high focusing efficiency or high signal to noise
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