

Simple Method to Realize Axicon Lens Using Liquid Crystal

電科大, 劉志強、陳曉西、[○]葉 茂

UESTC, Zhiqiang Liu, Xiaoxi Chen, [○]Mao Ye

E-mail: mao_ye@uestc.edu.cn

Axicon lens also known as conical lens or rotationally symmetric prism is widely used in different scientific research and application. It can be used to convert a parallel laser beam into a ring, to create a non-diffractive Bessel beam or to focus a parallel beam into long focus depth. Generally, the spot size of a Bessel beam is fixed for a given experimental setup. To change the Bessel beam spot size, the apex angle of axicon must be changed. It has been reported to fabricate axicon lenses using liquid crystal materials [1, 2]. In this paper, we report a simple method to realize an axicon lens using liquid crystal. [3].

The basic structure of the device is illustrated in Fig. 1.

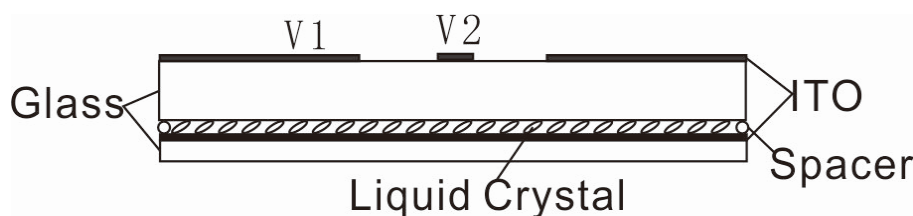


Fig. 1 Cell structure

The distribution of phase retardation is shown in Fig. 2.

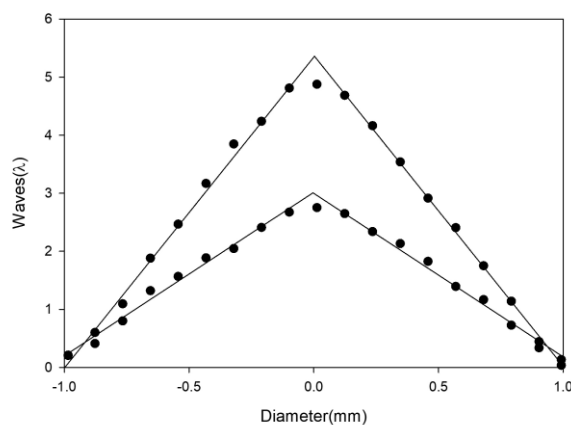


Fig. 2 Phase retardation

This work was supported by the Foundation of Science and Technology Department of Sichuan Province, China (2020yj0327).

[1] A. K. Kirby, et al, Opt. Express 15 (2007) 13496.

[2] 菅原 朋樹, et al, 第 66 回応物 (春) 10a-M136-2.

[3] M. Ye, et al, Appl. Opt. 43 (2004) 6407.