

## UO-22 Optical Information Processing using Liquid Crystal Spatial Light Modulation

- √ Open structure to enhance students' hands-on skills and deepen their understanding of experimental principles
- √ Powerful software for holographic encoding transform of images and their reconstruction
- √ Measurement of electro-optic effect of liquid crystal material
- √ Comprehensive experimental instructions



Liquid crystal (LC) is an organic polymer compound that may flow like a liquid, but the molecules may be aligned in a crystal-like orientation. When LC molecules are aligned, the material becomes optically anisotropic. A LC screen is a spatial light modulator (SLM) based on the electro-optic modulation property of the LC material. This type of modulator is electronically addressable so that both input and output signals of the device can be computer-controlled. A LC-SLM can be used for optical signal processing, such as computed holography. It is suitable for optical experiment education in opto-electronic information, physics and other related areas.

### Experiments

1. Electro-optic effect of liquid crystal
2. Microstructure measurement of an electronically addressable LC-SLM using diffraction theory
3. Optical interference and diffraction
4. Computed holography
5. Diffraction efficiency measurement of hologram
6. Verification of Fourier transform and holographic characteristics

### UO-26 Information Optical Experiments with Liquid Crystal Spatial Light Modulator Consists of:

Items	Description	Qty
1	LC-SLM	1
2	LC-SLM Driver	1
3	Semiconductor Laser with AC Adapter 650nm	1
4	Polarizer with Holder	2
5	CCD Camera	1
6	Fourier Transform Lens 60mm D f=300mm	1
7	B/W Monitor	1
8	Optical Power Meter with Detector Head	1
9	Optical Rail 100 Cm	1
10	Carriage	6
11	Black Screen	1
12	VGA Splitter 1to4	1
13	RS232 Cable	1
14	Application Software	1
15	Laser Holder	1

  

1- AC adapter	13 Camera
2-pc monitor	14 laser power meter
3-laser	15 carrier
4 polarizer	16 carriage
5-L.C.SLM	17 carriage
6-SLM driver	18 rail
7-analyzer	19 carriage
8-F.lens	
9-VGA splitter	
!0-PC	

