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## Research Awards Glenn H. Brown Prizes

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monochromatic and circularly polarized, as determined by the type of liquid crystal used. Note that the display is viewed in ordinary ambient light—neither polarizers nor backlighting are required. Also, as with nematic PDLC displays, no surface alignment treatment is required.

One can think of several ways to utilize such a display. First it can be used as a black and colour display, much like currently-used black and white displays. For a multicolour reflective display, several colours may be stacked; red, green, and blue would additively mix to produce colours in a large fraction of the chromaticity diagram. If one wanted to reflect 100% of the light instead of the 50% associated with one circular polarization, one could use a sandwich of right and left handed cholesterics. On the other hand there may be an application for a switchable circular polarizing filter where it is only desired to switch, say, right circularly polarized

light, leaving the left circularly polarized light unchanged.

The PDCLC display can also be used in the transmission mode. When switched on, the display will transmit 50% of one monochromatic single circular polarization. Use of an additional circular polarizer will make the switching 100% and allow the device to be used as a switchable circularly polarizing filter. Note that the untransmitted light is scattered and not absorbed, which is important for heat-producing projection displays. For a multicoloured display, stacked colours will also work, but the colour mixing will be subtractive, not additive. A switchable 100% shutter for one colour can also be constructed by stacking left and right handed liquid crystals, with no additional polarizers required. In principle, by suitable stacking, a 100% light shutter can be constructed which would switch all light on and off, again with no additional polarizers.

## References

- 1 Two excellent reviews are: Kitzerow, H.-S., 1994, *Liq. Cryst.*, **16**, 1–31; Kitzerow, H.-S., 1996, *Liquid Crystals in Complex Geometries*, edited by G. P. Crawford and S. Zumer (Taylor & Francis, London).
- 2 Ondris-Crawford, R. J., Boyko, E. P., Wagner, B. G., Erdmann, J. H., Zumer, S., and Doane, J. W., 1991, *J. Appl. Phys.*, **69**, 6380.
- 3 Kitzerow, H.-S., and Crooker, P. P., 1993, *Liq. Cryst.*, **13**, 31.
- 4 Bajc, J., and Zumer, S., 1997, *Phys. Rev. E*, March.
- 5 Crooker, P.P., Kitzerow, H.-S., and Xu, F., 1994, *Liquid Crystal Materials, Devices, and Applications III*, edited by R. Shashidar, *Proc. SPIE*, **2175**, 173.

## Research Awards

# Glenn H. Brown Prizes

Glenn H. Brown prizes were established to advance and diffuse knowledge of liquid crystal states of matter by encouraging effective written and oral presentations of doctoral research results. In 1998, two US\$1000 prizes will be awarded for outstanding theses completed after 1994 in liquid crystal research. Theoretical, experimental and/or applied work on thermotropic, polymeric and/or lyotropic liquid crystal systems will be considered.

Prize winners will deliver Glenn H. Brown lectures at the 17th International Liquid Crystal Conference in Strasbourg, France. Nominations should include a copy of the thesis (which will not be returned) and an English summary of its outstanding features.

### Send by 1 February 1998 to:

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