described below, mullions are typically used both to join tiles on the display device and to hide the edges where the tiles meet.

[0061] The displays described above have been, in general, monochrome displays. The pixels have a single emissive area which is controlled by a single row and column electrode pair. Color pixels may be implemented as shown in **FIGS. 7 and 8**. **FIG. 7** shows a single pixel having separate red (R) **720**, green (G) **722** and blue (B) **724** sub-pixels. The three sub-pixels **720**, **722** and **724** each has a respective column electrode (not shown) which is connected to the electronics section by the vias **710**, **712** and **714**, respectively. A single row electrode (not shown) is used by all three of the sub pixels. This row electrode is coupled to the electronics section by the via **716**, shown in phantom. The row electrode **716** is shown in phantom as it is beneath the row electrode and, so, would not be visible. The geometry of the triple sub-pixel structure is defined by d_{SH}, the height of the sub-pixel, d_{SW}, the width of the sub-pixel, and d_e, the distance from the active sub-pixel areas to the edge of the pixel area. For one exemplary embodiment of the invention, these dimensions are given in Table 1 in terms of the pixel pitch, P.

TABLE 1

d_{SH}	.5 P
d_{SW}	.16 P
d_e	.25 P

[0062] **FIG. 8** illustrates an alternative color pixel structure. This structure includes four sub-pixel elements, **830**, **832**, **834** and **836**. Two of these sub-pixel elements, **830** and **836** emit green light when stimulated while the other two pixel elements, **832** and **834** emit red and blue light, respectively. This structure is known as a quad sub-pixel structure. The structure uses two green sub-pixels because more of the luminance information in a color display is in the green pixels than is in either of the red or blue pixels. Alternatively, if a particular display technology cannot produce light in one color band of the same intensity as light in another color band, the duplicate pixel may be of the low-emitting color. For an OLED display, for example, it may be advantageous for the two duplicated pixels to be red pixels instead of green. For an electroluminescent display, it may be advantageous for the duplicate pixel to be blue. Thus, the use of two sub-pixels of the same color allows for a brighter display in a variety of display technologies. In addition, the spacing of the sub-pixels of the quad pixel acts to reduce the visibility of the pixel structure and improve the perceived spatial resolution of the display device, even though the exemplary pixel structure shown in **FIG. 8** has an aperture of approximately 25%. In addition, the spacing of the sub-pixels allows vias to be routed between the sub-pixel areas.

[0063] The pixel structure shown in **FIG. 8** employs two row electrodes (not shown) and two column electrodes (not shown). The row electrodes are coupled to the electronics section by the vias **816** and **818** (shown in phantom) while the column electrodes are coupled to the electronics section by the vias **810** and **812**. The geometry of the quad sub-pixel structure is defined by the dimensions d_{SH}, the height of the sub-pixel, d_{SW}, the width of the sub-pixel, d_e, the distance from the active sub-pixel areas to the edge of the pixel area, and d_{SI} the distance between adjacent sub-pixels. These values are defined in Table 2 for the exemplary embodiment of the invention.

TABLE 2

d_{SH}	.25 P
d_{SW}	.25 P
d_e	.125 P
d_{SI}	.25 P

[0064] While **FIGS. 7 and 8** show the distances d_e and d_{SI} as being equal in the horizontal and vertical directions, it is contemplated that these values may be different. The exemplary pixel structures shown in **FIGS. 7 and 8** both have active pixel areas covering approximately one-fourth of the pixel area to produce a pixel aperture of approximately 25%. This value is exemplary only. The invention contemplates both larger and smaller pixel apertures.

[0065] The relatively small aperture of the pixels in the exemplary embodiment of the invention, however, provides one level of contrast enhancement. The combination of the low aperture and the spaces between the quad sub-pixels, as shown in **FIG. 8** produces a further advantage by acting to conceal the pixel structure when an image is being displayed.

[0066] Another contrast enhancement is to reduce the reflection of ambient light from the surface of the display device. One way in which ambient reflection from a display surface may be reduced is to add an absorbing black matrix to any location on the display surface that does not block or absorb the light emitted by the pixel. For an emissive display, the black matrix is placed between the emitting area of the pixels. For a light-valve display, the black matrix is placed between the light valve areas. If the black matrix is properly aligned with the pixel structure, little emitted or passed light is blocked. Ambient light, however, falling on the black matrix is absorbed and does not interfere with light that is emitted by, reflected by, or passed by the pixel structures of the display device. The application of the black matrix can be done by any printing or lithography process. The shape of the black matrix can be one dimensional (e.g. lines) or two dimensional (e.g. an array of apertures). The materials of the black matrix can be any absorber (e.g. inks, paints, dyes, . . .). A good absorber is preferred to a weaker (e.g. has greater residual reflectivity) absorber, and a "flat black" (e.g. residual reflectivity is more diffuse than reflective) is an improvement over a "glossy black" (e.g. residual reflectivity is more specular than diffuse).

[0067] Alternatively, as described below with reference to **FIG. 12**, the black matrix can be applied to the inside (non viewer) side of the front cover glass, or to the viewer side of the substrate. In all structures, there is a specular reflective component from any viewer side surface of the front cover glass that is not covered with black matrix (e.g. the area through which the emitted light exits, and all the area in structures where the black matrix is not applied to the viewer side of the front cover glass). Contrast improvement can be achieved by coating any of these areas with an antireflective coating. An antireflective coating will reduce the normal specular component which is typically about 5% to an amount less than that. Combinations of these black matrix