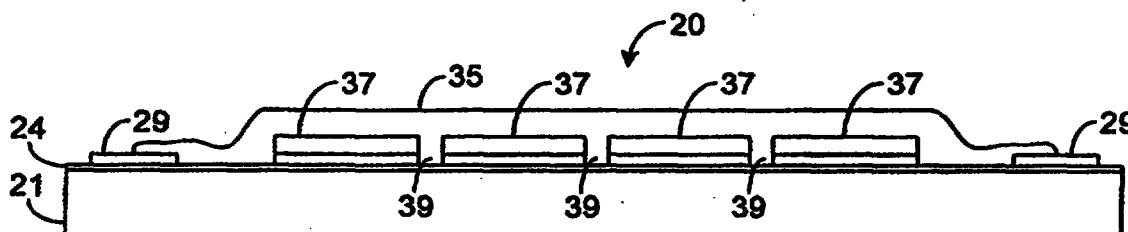




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <p>(21) International Application Number: <b>PCT/US98/06587</b></p> <p>(22) International Filing Date: <b>3 April 1998 (03.04.98)</b></p> <p>(30) Priority Data:<br/>             60/042,515                      4 April 1997 (04.04.97)                      US<br/>             09/054,188                      2 April 1998 (02.04.98)                      US</p> <p>(71) Applicant: <b>GEORGIA TECH RESEARCH [US/US]; 400 Tenth Street, Centennial Research Building, Atlanta, GA 30332-0415 (US).</b></p> <p>(72) Inventors: <b>DRABIK, Timothy, J.; 496 Bryn Mawr Lane, N.W., Atlanta, GA 30327 (US). KOHL, Paul, A.; 130 Cameron Glen Drive, Atlanta, GA 30328 (US).</b></p> <p>(74) Agent: <b>HORSTEMEYER, Scott, A.; Thomas, Kayden, Horstemeier &amp; Risley, L.L.P., Suite 1500, 100 Galleria Parkway, Atlanta, GA 30339 (US).</b></p> | <p>(81) Designated States: <b>CA, JP, KR, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</b></p> <p><b>Published</b><br/> <i>With international search report.<br/>         Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> |                                                                                                                                     |

(54) Title: **SYSTEM AND METHOD FOR EFFICIENT MANUFACTURING OF LIQUID CRYSTAL DISPLAYS**

## (57) Abstract

The present invention enables efficient microfabrication of a fully integrated liquid crystal display device (20). Initially, a sacrificial layer is patterned, and portions of the sacrificial layer are removed to expose portions of the underlying layer supporting the sacrificial layer (37). Then, a permeable layer is formed on the sacrificial layer (35), thereby filling in the space vacated by the removed portions of the sacrificial layer (37). The structure is heated and the material of the sacrificial layer is allowed to dissolve into and dissipate through the permeable layer in order to leave a cavity (37). Once the sacrificial layer is removed, the permeable layer (35) is supported by the portion of the permeable layer filling in the space vacated by the removed portions of the sacrificial layer. Accordingly, a monolithic liquid crystal display (20) is easily and reliably formed without having to etch an opening in the structure to allow the sacrificial material to egress from the structure and without having to separately attach mechanical components to each liquid crystal display manufactured.