

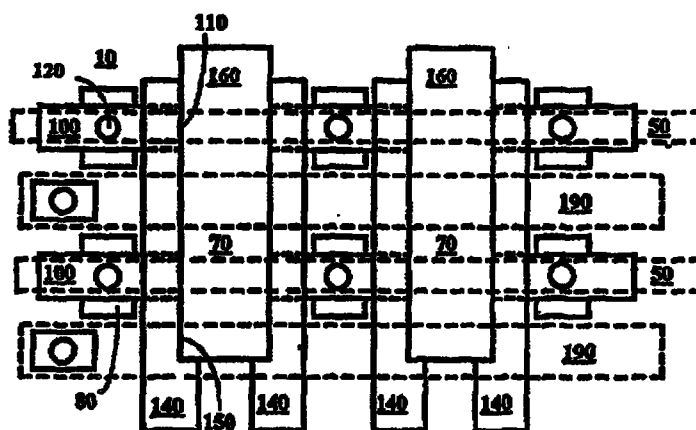
9705545-3

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H01J 9/40	A1	(11) International Publication Number: WO 96/38855 (43) International Publication Date: 5 December 1996 (05.12.96)
(21) International Application Number: PCT/US96/08237 (22) International Filing Date: 31 May 1996 (31.05.96) (30) Priority Data: 08/459,033 2 June 1995 (02.06.95) US (71) Applicant: ADVANCED VISION TECHNOLOGIES, INC. [US/US]; 40 Sandringham Road, Rochester, NY 14610 (US). (71)(72) Applicant and Inventor: POTTER, Michael, D. [US/US]; East Shore Road, P.O. Box 174, Grand Isle, VT 05458 (US). (74) Agent: TOUW, Theodore, R. ; 4 Forest Lane, Westford, VT 05494 (US).		(81) Designated States: AB, BR, CA, CN, HU, JP, KP, KR, MX, NO, NZ, PL, RU, SG, TR, UA, VN , Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report.

(54) Title: **FABRICATION PROCESS FOR HERMETICALLY SEALED CHAMBER IN SUBSTRATE**

(57) Abstract

A process for fabricating, in a planar substrate, a hermetically sealed chamber for a field-emission cell or the like, allows operating the device in a vacuum or a low pressure inert gas. The process includes methods of covering an opening (160), enclosing the vacuum or gas, and methods of including an optional quantity of gettering material. An example of a device using such a hermetically sealed chamber is a lateral-emitter field-emission device (10) having a lateral emitter (100) parallel to a substrate (20) and having a simplified anode structure (70). In one simple embodiment, a control electrode (140) is positioned in a plane above the emitter edge (110) and automatically aligned to that edge. The simplified devices are specially adapted for field emission display arrays. An overall fabrication process uses steps (S1-S18) to produce the devices and arrays. Various embodiments of the fabrication process allow the use of conductive or insulating substrates (20), allow fabrication of devices having various functions and complexity, and allow covering a trench opening (160) etched through the emitter and insulator, thus enclosing the hermetically sealed chamber.