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(54) Title: METAL-ASSISTED CHEMICAL ETCH TO PRODUCE POROUS GROUP III-V MATERIALS

(57) Abstract: A thin discontinuous layer of metal such as Au, Pt, or Au/Pd is deposited on a Group III- V material surface. The surface is then etched in a solution including HP and an oxidant for a preferably brief period, as little as a couple seconds to one hour. A preferred oxidant is H₂O₂. Morphology and light emitting properties of porous Group III- V material can be selectively controlled as a function of the type of metal deposited, doping type, doping level, metal thickness, whether emission is collected on or off the metal coated areas and/or etch time. Electrical assistance is unnecessary during the chemical etching of the invention, which may be conducted in the presence or absence of illumination.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H01L 21/3063

US CL : 438/18, 459, 479, 486, 745, 750, 753

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : U.S. :US CL: 438/18, 459, 479, 486, 745, 750, 753

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,895,223 A (PENG et al) 20 APRIL 1999, col.4, lines 6-62.	1-23
Y	US 5,868,947 A (SAKAGUCHI et al) 09 FEBRUARY 1999, col.1, lines 36-38.	1, 12, 23
Y	US 5,695,557 A (YAMAGATA et al) 09 DECEMBER 1997, col. 16, lines 5-10.	8, 19
A	US 5,981,400 A (LO) 09 NOVEMBER 1999	1, 11, 12, 23

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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