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(54) Title: PIEZORESISTIVE STRAIN CONCENTRATOR

(57) Abstract: A piezoresistive strain concentrator that converts mechanical movement into electrical output and a process for fabricating the concentrator are provided. The device includes a strain sensing structure composed of a piezoresistive strain sensitive element that spans a gap in a substrate. The strain sensing structure is supported on a strain concentrating structure also spanning the gap that has vertical walls extending to a cross-section at the base of the gap, both structures being etched from the substrate. The structure of the strain-concentrating support for the strain sensitive element is fabricated by deep reactive ion etch (DRIE). The strain sensing structure has an increased sensitivity, a low gage factor and an increased resistance to buckling and fracture compared to previous strain gage structures. Several of the strain sensing structures can be connected in a sequence in a bridge circuit.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/43259

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC: **G01L 9/16** (2007.01)

USPC: 73/754

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. : 73/754

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.
A	US 5,773,728 A (Tsukada et al) 30 June 1998 (30.06.1998), whole document	1-31
A	US 5,539,236 A (kurtz et al) 23 July 1996 (23.07.1996), whole document	1-31
A	US 5,425,841 A (Kurtz et al) 20 June 1995 (20.06.1995), whole document	1-31

Further documents are listed in the continuation of Box C.

See patent family annex.

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