Title (en)

METHOD AND APPARATUS FOR THE PRODUCTION OF THIN DISKS OR FILMS FROM SEMICONDUCTOR BODIES

Title (de)

VERFAHREN UND VORRICHTUNG ZUR HERSTELLUNG VON DÜNNEN SCHEIBEN ODER FOLIEN AUS HALBLEITERKÖRPERN

Title (fr)

PROCÉDÉ ET DISPOSITIF POUR PRODUIRE DES TRANCHES FINES OU DES FILMS À PARTIR DE CORPS SEMI-CONDUCTEURS

Publication

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Application

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Priority

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Abstract (en)

[origin: DE102007018080B3] The e.g. silicon body (1) is prepared and a parting tool (2) is brought up to it. Relative motion is set up between them, for separation of the semiconductor sheet (3) in succession, from the body (1). The freed section (8) of semiconductor is spread away from body and supported as appropriate. On complete separation, the semiconductor sheet is removed and sent to a station for further processing, or to a storage location. The sheet is made by separating-off a surface of the semiconductor block. The sheet is formed by tangential separation from the outer surface of a semiconductor rod. This may take place at several locations around the periphery of the rod. Spreading provides space for introduction of the parting tool between the sheet and the rod or block. The space is formed by the surface of the body, the tip of the tool and the surface (8) of the sheet which has been spread away. For separation, a pulsed, sharply-focused laser beam is used. Alternatively a probe with a liquid or gaseous etching medium is employed. Separation takes place in vacuum or special gaseous atmospheres. A laser may be used to modify the body, and may operate in combination with an etchant, for sheet removal. Using tangential separation, a semiconductor sheet of almost any required length can be produced. Where more than one tangential separator is used, sheets are produced simultaneously in almost any required length. For separation, the workpiece temperature exceeds 200[deg] C. Salient features of the apparatus include further support for the sheet which exerts tensions, reduced pressures, vacuum and/or increased pressures. Gas- or mechanical pressures are exerted. The spreader is electrostatic. A support roller avoids all but reversible elastic deformation of the sheet. A pulsed laser is used, the pulse duration being less than 10 ->9>s. It has high beam quality and sharp focusing. Linear laser focusing and arrays, employ cylindrical lenses for separation along a line. They may also be used with glass fibers in a medium, brought close to the working location. A fiber laser is used. Frequency multiplication is employed. An independent claim IS INCLUDED FOR corresponding equipment.

IPC 8 full level

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