Title (en)

INCIDENT RADIATION INDUCED SUBSURFACE DAMAGE FOR CONTROLLED CRACK PROPAGATION IN MATERIAL CLEAVAGE

Title (de)

DURCH EINFALLENDE STRAHLUNG INDUZIERTE OBERFLÄCHENBESCHÄDIGUNG ZUR KONTROLLIERTEN RISSAUSBREITUNG IN DER MATERIALSPALTUNG

Title (fr)

DOMMAGE SOUTERRAIN INDUIT PAR UN RAYONNEMENT INCIDENT POUR PROPAGATION DE FISSURE CONTRÔLÉE DANS LE CLIVAGE DE MATÉRIAU

Publication

EP 3826803 A4 20220420 (EN)

Application

EP 19840951 A 20190726

Priority

- US 201862703642 P 20180726
- US 2019043774 W 20190726

Abstract (en)

[origin: WO2020023929A1] A cleaving system employs a shaper, a positioner, an internal preparation system, an external preparation system, a cleaver, and a cropper to cleave a workpiece into cleaved pieces. The shaper shapes a workpiece into a defined geometric shape. The positioner then positions the workpiece such that the internal preparation system can generate a separation layer at the cleaving plane. The internal preparation system focuses a laser beam internal to the workpiece at a focal point and scans the focal point across the cleaving plane to create the separation layer. The external preparation system scores the external surface of the workpiece at a location coincident with the separation layer. The cleaver cleaves the workpiece by propagating the crack on the external surface along the separation layer. The cropper shapes the cleaved piece into a geometric shape as needed.

IPC 8 full level

B23K 26/53 (2014.01); **C03B 33/02** (2006.01); **C03B 33/033** (2006.01); **H01S 5/02** (2006.01)

CPC (source: EP KR)

B23K 26/0622 (2015.10 - KR); **B23K 26/38** (2013.01 - KR); **B23K 26/40** (2013.01 - KR); **B23K 26/53** (2015.10 - EP KR); **C03B 33/0222** (2013.01 - EP); **C03B 33/033** (2013.01 - EP); **H01S 5/02** (2013.01 - KR); B23K 2101/40 (2018.07 - KR); B23K 2103/56 (2018.07 - KR)

Citation (search report)

- [XY] EP 1570941 A2 20050907 - CANON KK [JP]
- [Y] US 2016303764 A1 20161020 - BOLLMAN ANDREW [US], et al
- See references of WO 2020023929A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

WO 2020023929 A1 20200130; CN 112601633 A 20210402; EP 3826803 A1 20210602; EP 3826803 A4 20220420; JP 2021531982 A 20211125; JP 7174850 B2 20221117; KR 102487262 B1 20230110; KR 20210038657 A 20210407; TW 202019601 A 20200601; TW I735924 B 20210811

DOCDB simple family (application)

US 2019043774 W 20190726; CN 201980049501 A 20190726; EP 19840951 A 20190726; JP 2021527028 A 20190726; KR 20217006093 A 20190726; TW 108126645 A 20190726