

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
14 April 2022 (14.04.2022)



(10) International Publication Number
WO 2022/073108 A1

(51) International Patent Classification:

H01L 21/02 (2006.01) H05K 3/00 (2006.01)
B32B 7/06 (2019.01)

(21) International Application Number:

PCT/CA2021/051388

(22) International Filing Date:

05 October 2021 (05.10.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/088,133 06 October 2020 (06.10.2020) US
63/088,150 06 October 2020 (06.10.2020) US

(71) Applicant: OMNIPLY TECHNOLOGIES INC.

[CA/CA]; 780 avenue Brewster, Suite RC-016, Montreal,
Québec H4C 2K1 (CA).

(72) Inventors: ZAATO, Francis; 780 avenue Brewster, Suite
RC-016, Montreal, Québec H4C 2K1 (CA). TAZ, Hu-
maira; 780 avenue Brewster, Suite RC-016, Montreal,
Québec H4C 2K1 (CA). NANAYAKKARA, Avinash; 780
avenue Brewster, Suite RC-016, Montreal, Québec H4C
2K1 (CA). DOSHI, Harit; 780 avenue Brewster, Suite
RC-016, Montreal, Québec H4C 2K1 (CA).

(74) Agent: ROBIC; 630 Rene-Levesque Boulevard West, 20th
Floor, Montreal, Québec H3B 1S6 (CA).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,

(54) Title: TECHNIQUES FOR FABRICATING AND SEPARATING FLEXIBLE MICROELECTRONICS DEVICES FROM RIGID SUBSTRATES

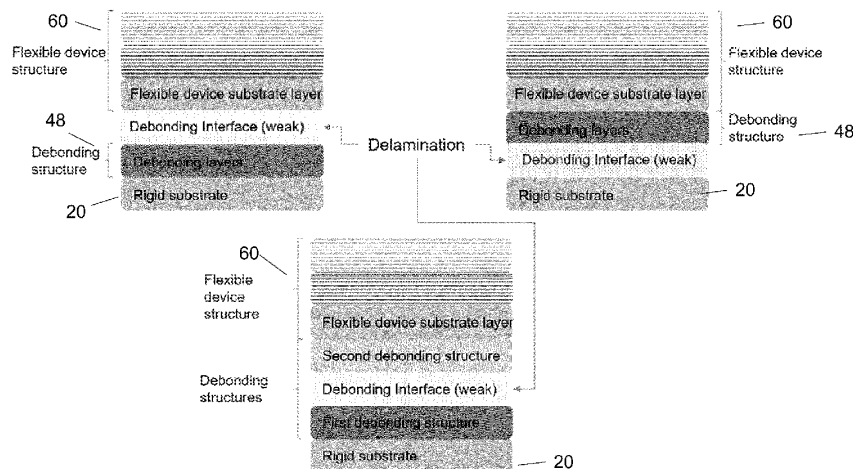


FIG. 6D

(57) Abstract: A laminate structure and a method used in the manufacturing of flexible microelectronics devices are provided. The laminate structure comprises a rigid substrate, a flexible microelectronics structure comprising a debonding structure provided between the rigid substrate and the flexible microelectronics structure. The debonding structure comprises at least one debonding layer made of a non-metallic inorganic material. The laminate structure comprises first and second peeling surfaces, where at least one of the peeling surfaces corresponding to a surface of the debonding structure or to a surface within the debonding structure. The first and second peeling surfaces are peelable by a debonding force resulting from a mechanical delamination and/or from a pressurized fluid delamination, allowing separating the flexible microelectronic device from the rigid substrate.

[Continued on next page]

SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*
— *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*