

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
26 June 2025 (26.06.2025)



(10) International Publication Number
WO 2025/132655 A1

- (51) **International Patent Classification:**
H10N 30/073 (2023.01) *H10N 30/086* (2023.01)
- (21) **International Application Number:**
PCT/EP2024/087222
- (22) **International Filing Date:**
18 December 2024 (18.12.2024)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
FR2314528 19 December 2023 (19.12.2023) FR
- (71) **Applicant:** **SOITEC** [FR/FR]; Parc Technologique des Fontaines, Chemin des Franques, 38190 Bernin (FR).
- (72) **Inventors:** **MAUROIS, Cécile**; Parc Technologique des Fontaines, Chemin des Franques, 38190 Bernin (FR). **HUYET, Isabelle**; Parc Technologique des Fontaines, Chemin des Franques, 38190 Bernin (FR). **THIEFFRY, Stéphane**; Parc Technologique des Fontaines, Chemin des Franques, 38190 Bernin (FR). **MILLET, Céline**; Parc Technologique des Fontaines, Chemin des Franques, 38190 Bernin (FR).
- (74) **Agent:** **IP TRUST**; 8 rue La Fayette, 75009 PARIS (FR).

(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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

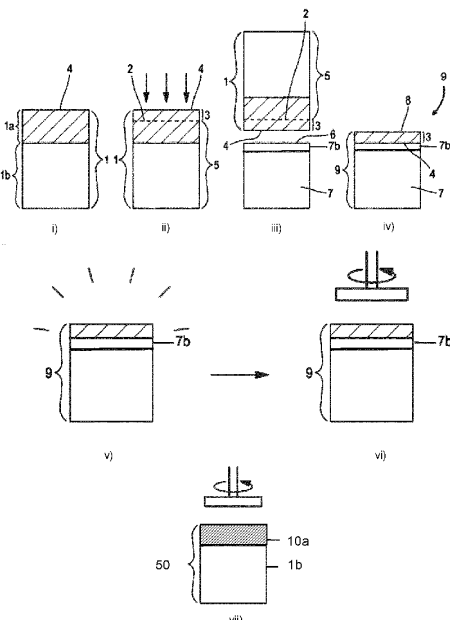
(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, 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).

Published:

— with international search report (Art. 21(3))

(54) **Title:** REFRESHING OF A DONOR SUBSTRATE FOR THE MANUFACTURE OF A POI STRUCTURE

[Fig. 1]



(57) **Abstract:** The present invention relates to a method of refreshing a donor substrate for the manufacture of a Piezoelectric on Insulator, POI, structure, comprising providing the donor substrate to be refreshed comprising a support substrate and a first piezoelectric substrate formed over the support substrate comprising or consisting of one of lithium tantalate and lithium niobate, wherein the first piezoelectric substrate is a second piezoelectric substrate from which a piezoelectric layer has been transferred to a target substrate and chemical-mechanical polishing, CMP, the first piezoelectric substrate to obtain a refreshed donor substrate comprising a refreshed piezoelectric substrate, wherein the CMP comprises removing a layer of the first piezoelectric substrate with a thickness of at most 2 μm , in particular, at most 1.2 μm .

WO 2025/132655 A1