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(71) **Applicant** *(for all designated States except US)*: **S.O.I.TEC SILICON ON INSULATOR TECHNOLOGIES** [FR/FR]; Parc Technologique des Fontaines, Chemin des Franques, F-38190 Bernin (FR).

(72) **Inventors; and**
(75) **Inventors/Applicants** *(for US only)*: **SCARFOGLIERE, Benjamin** [FR/FR]; 83, rue Mallifaud, F-38100 Grenoble (FR). **BEN MOHAMED, Nadia** [FR/FR]; 5, avenue Paul Eluard, F-38130 Echirolles (FR). **CATTET, Sébastien** [FR/FR]; 5, Lot Mon Domaine, Route de Grenoble, F-38420 Domene (FR).

(74) **Agents**: **DESORMIERE, Pierre-Louis** et al.; Cabinet Beau De Lomenie, 158 Rue de l'Université, F-75340 Paris Cedex 07 (FR).

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(54) **Title**: CONTROLLED TEMPERATURE IMPLANTATION

(57) **Abstract**: In order to reduce and render uniform the surface roughness and variations in thickness of a layer after detachment (post-fracture) of a donor substrate (18), the mean temperature of the donor substrate (18) during implantation thereof is controlled so as to be in the range 20°C to 150°C with a maximum temperature variation of less than 30°C.