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(71) Applicants:

- **Interuniversitair Microelektronica Centrum vzw (IMEC)**
3001 Leuven (BE)
- **Innogenetics N.V.**
9052 Ghent (BE)

(72) Inventors:

- **Laureyn, Wim**
3001, Leuven (BE)
- **Suls, Jan**
3010, Kessel-Lo (BE)
- **Jacobs, Paul**
9160, Lokeren (BE)

(74) Representative: **Sarlet, Steven Renaat Irène et al**

Gevers & Vander Haeghen,
Holidaystraat, 5
1831 Diegem (BE)

(54) **Polymer replicated interdigitated electrode arrays for (bio)sensing applications**

(57) Interdigitated electrode arrays are very promising devices for multiparameter (bio)sensing, for example the label-free detection of nucleic acid hybridisation for diagnostic applications. The current invention comprises an innovative method for the affordable manufacturing of polymer-based arrays of interdigitated electrodes with μm -dimensions. The method is based on a combination of an appropriate three-dimensional structure and a single and directional deposition of conductive material. The three-dimensional structure can be realized in a polymer material using a moulding step, for which the moulds are manufactured by electroplating as a reverse copy of a silicon master structure. In order to ensure sufficient electrical isolation and individual, but convenient, accessibility of the sensors in the array, the interdigitated electrode regions need to be complemented with specific features on the three-dimensional structure. Combined with the use of e.g. shadow masks in the deposition step, these features allow for the site-specific deposition of the conductive material. The technology described has the additional advantage to integrate highly miniaturized and arrayed electronics elements into polymer micro-fluidics technology, which leads to the affordable manufacturing

of (bio)sensor arrays.

