

Dynamic PDMS inking for DNA patterning by soft lithography

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Abstract:

Microcontact printing (μ CP) is used as a patterning technique to produce simple, rapid and cost-effective DNA microarrays. The accuracy of the final transferred pattern drastically depends on the inking step. The usual way to ink a PDMS stamp by droplet deposition of labeled biomolecules using a pipette, results in irregular transfer of the biomolecules on the chip surface and leads to poor and irreproducible fluorescent signals. These drawbacks are likely due to irregular 'coating' of the biomolecules on the PDMS stamp. In this work, a novel approach for inking PDMS with DNA molecules is presented. It is based on the continuous displacement of the meniscus formed by the inking solution over the surface of the stamp. When compared with the conventional technique, this dynamic PDMS inking method proved to be very reproducible for producing regular prints/spots on a functionalized glass slide, and this method could be easily extrapolated at an industrial scale.

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