

Nano -engineering of bio-arrays at 157 nm

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Laser surface functionalization and micro/nano patterning of polymeric substrates at 157 nm, is a novel and simple methodology for bio-array fabrication, which allows surface etching with atomic resolution, strengthens localized protein binding on surfaces and increases writing density of arrays [1].

Surface morphology and functionalization in VUV depend on material and irradiation parameters. In this work selective protein binding on polystyrene substrates coated with a 2nm protective BSA inert protein was obtained following BSA removal with laser light at 157nm.

Different proteins were bind separately on the polystyrene surface following first laser treatment and then protein binding by dipping in solutions in repetitive steps. This finding simplifies the DNA chip fabrication with laser ablation at 157nm as it eliminates the need of developing new polymeric materials for the intermediate steps.

References

1. A.M Douvas, P.S Petrou, S.E. Kakabakos K. Misiakos, P. Argitis, E Sarantopoulou,.., Z. Kollia, A.C Cefalas,. Anal. Bioanal. Chem. 381, 1027, 2005.