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P27 - Creation of double tilted pillar structures for microfluidic applications

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Exploiting the advantages of P-beam writing lithographic method to make irradiations into tilted samples, doubly tilted pillar microstructures are created for microfluidic applications.

SU-8 negative tone resist spin-coated on glass substrate was irradiated with 2 MeV proton microbeam. The created structures consisted of pillars standing in rows inside an appropriate frame. The fluid (water, blood, etc.) can be coupled through an inlet into the chip and extracted through an outlet. The goniometer feature of the Atomki microbeam facility enabled us to tilt the pillars relative to the surface normal (in this case odd rows were tilted by +20 and even rows by -20 degrees).

The aim of tilting the pillars is to increase the functional surface of the pillars with which the fluid can interact with the stationary phase, and to improve the fluid dynamics properties. With the help of this promising method we are able to create microfluidic chips that can be used for an improved efficiency cell capture device.

Primary author: Dr RAJTA, Istvan (MTA Atomki, Debrecen, Hungary)

Co-authors: GUTTMAN, Andras (MTA-PE Translational Glycomics Group, MUKKI, University of Pannonia, Veszprém, Hungary); SZABO, Attila (MTA Atomki, Debrecen, Hungary); BARADACS, Eszter (DE TTK - ATOMKI Joint Department of Environmental Physics, Debrecen, Hungary); JARVAS, Gabor (MTA-PE Translational Glycomics Group, MUKKI, University of Pannonia, Veszprém, Hungary); NAGY, Gyula (MTA Atomki, Debrecen, Hungary); BODNAR, Judit (MTA-PE Translational Glycomics Group, MUKKI, University of Pannonia, Veszprém, Hungary); HAJBA, Laszlo (MTA-PE Translational Glycomics Group, MUKKI, University of Pannonia, Veszprém, Hungary); SZIGETI, Marton (MTA-PE Translational Glycomics Group, MUKKI, University of Pannonia, Veszprém, Hungary); FURJES, Peter (Research Centre for Natural Sciences, Institute for Technical Physics and Materials Science, Hungarian Academy of Sciences, Budapest, Hungary); HUSZANK, Robert (MTA Atomki, Debrecen, Hungary); SZILASI, Szabolcs (University of North Texas, TX, USA; MTA Atomki, Debrecen, Hungary); FEKETE, Zoltan (Research Centre for Natural Sciences, Institute for Technical Physics and Materials Science, Hungarian Academy of Sciences, Budapest, Hungary)

Presenter: Dr RAJTA, Istvan (MTA Atomki, Debrecen, Hungary)

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