



Magnetics and Microhydrodynamics, from guided transport to delivery

ESR 13 Magneto-lithography for cell diagnostics

Research project	<p>The generation of well-defined moulds by magnetic-patterns will be employed to generate active surfaces with microcontact printed proteins for cell adhesion and precise sensor integration. Photopolymerisable magnetic materials will be used to generate patterns, defined by the induced magnetic field, and then photo-cured in order to generate solid patterns for master generation. These masters will be used to generate the soft moulds of PDMS for both stamp and microchannel fabrication. This novel technique will set the bases of fabrication of biomicrofluidic devices for cell arrays,¹ which will be employed in different bio-applications (<i>e.g.</i> cell sorting, single cell analysis) and in industry. These induced magnetic patterns will also be used to generate nanostructures on the surface of soft materials (<i>e.g.</i> PDMS), thereby modulating its surface roughness and so change the hydrophobicity/hydrophilicity of the surface. An interesting outcome of this investigation will be the generation of super hydrophobic surfaces within microfluidic channels for fluid control and manipulation of liquids for applications in liquid reagent storage in microfluidics.</p> <p>¹ C. Hamon et al., <i>Adv. Funct. Mater.</i>, 26 (2016), 8053.</p>
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Host Institution	University of the Basque Country UPV/EHU BIOMICs microfluidics Microfluidics Cluster UPV/EHU Lascaray Research Center Avenida Miguel de Unamuno 3 01006, Vitoria-Gasteiz, Spain
Required profile	The candidate should hold a MS degree in Chemistry, with a strong background in synthetic chemistry and/or polymer chemistry. Knowledge in microfluidics, surface patterning and surface engineering are desirable. Interest for interdisciplinary research is important. Research secondments are planned at Elvesys in France (ELV), the Trinity College Dublin (TCD) in Ireland and the Centre National de la Recherche Scientifique (CNRS-IPCMS) in France. The candidate should not have lived in Spain in the past 12 months.