ICMAB SEMINAR SERIES: 5th OCTOBER at 12:00 h, Conference room

Biofunctional polymer surfaces: from superhydrophobicity to high-throughput cell screening

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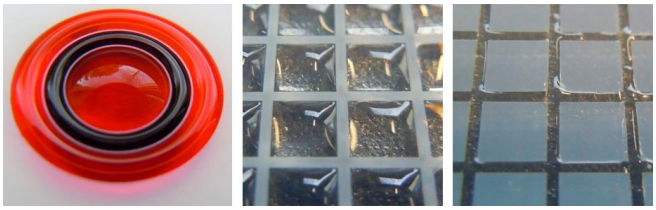
ABSTRACT

Research in my group is focused on the synthesis and application of biofunctional materials, surfaces and nanoparticles. We are working on the development of methods for surface functionalization with an emphasis on photochemical techniques, surface micropatterning, wettability and superhydrophobicity. In this talk I will present our recent results on the development of methods for surface photo-patterning and fabrication of superhydrophobic-superhydrophilic structures. Different biological applications of produced polymer substrates, including cell patterning and cell screening will be briefly discussed.



Dr. Pavel Levkin studied at the Moscow Institute of Fine Chemical Technology and carried out his PhD (awarded in 2007) with Volker Schurig at the University of Tübingen. From 2007−2009, he was a postdoctoral fellow with Jean M.J. Fréchet and Frank Svec at the University of California, Berkeley, and in 2009, he became head of the Helmholtz Research Group of Biofunctional Materials at the Karlsruhe Institute of Technology and the University of Heidelberg, Germany. Levkin's research is focused on the investigation of cell-surface interactions and the development of biofunctional materials, as well as nanoparticles for drug- and gene-delivery applications. Levkin is a recipient of the Ewald Wicke Award (2014), the ERC Starting Grant (2014) and the Heinz Maier-Leibnitz Prize (2015).

Droplet-Array (DA) Sandwich Chip: A Versatile Platform for High-Throughput Cell Screening Based on Superhydrophobic–Superhydrophilic Micropatterning, Adv. Mat. 2015;DOI:10.1002/adma.201502115

Reversible and Rewritable Surface Functionalization and Patterning via Photodynamic Disulfide, Adv. Mat. 2015; DOI:10.1002/adma.201501177

UV-induced tetrazole-thiol reaction for polymer conjugation and spatial control of surface, Angete Chemie Int. Ed., 2015, 54, 30, 8732–8735

Reactive Superhydrophobic Surface and Its Photoinduced Disulfide-ene and Thiol-ene (Bio)functionalization, Nano Lett., 2015, 15 (1), pp 675-681 DOI: 10.1021/nl5041836

UV-Triggered Dopamine Polymerization: Control of Polymerization, Surface Coating, and Photopatterning, Advanced Materials DOI: DOI: 10.1002/adma.201403709

Surface Patterning via Thiol-Yne Click Chemistry: an Extremely Fast and Versatile Approach to Superhydrophilic-Superhydrophobic Micropatterns, Advanced Materials Interfaces DOI: 10.1002/admi.201400269

Note. Dr Levkin will be at the ICMAB on the 5th of October, please contact with Anna Roig (roig@icmab.es) before that date if you are interested to discuss with him privately in order to arrange the agenda.