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in kemijsko tehnologijo

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VABILO NA PREDAVANJE V OKVIRU DOKTORSKEGA ŠTUDIJA KEMIJSKE ZNANOSTI / INVITATION TO THE LECTURE WITHIN DOCTORAL PROGRAMME IN CHEMICAL SCIENCES

Assoc. Prof. Dr. Unai Silván De Pedro

BCMaterials, Basque Center on Materials, Applications and Nanostructures, Leioa, Spain

z naslovom / title:

Unraveling the impact of the protein interface on the cell response to biomaterials

v sredo, 15. 5. 2024 ob 15. uri /
on Wednesday, 15. 5. 2024 at 15.00
v predavalnici 1 v 1. nadstropju Fakultete za kemijo in kemijsko tehnologijo, Večna pot 113 **/ in lecture room 1,** 1st floor at the Faculty of Chemistry and Chemical Technology, Večna pot 113

Vljudno vabljeni! / Kindly invited!

Abstract:

The tissue microenvironment is a dynamic niche in which biochemical and biophysical cues converge and determine cell behaviour. Among the different physical stimuli present in the body, electromechanical signals, that is the combination of mechanical stress and changes in the electric potential, have been identified as essential for the proper function of a number of organs, including bone, skin, and heart, among others. Accordingly, the use of advanced materials capable of delivering such stimuli shows great potential in the field of tissue engineering. These signals can be delivered using piezoelectric materials, i.e. a type of material that generates an electric charge in response to mechanical stress, and conversely, experience mechanical strain when an electric field is applied to them. In fact, a number of piezoelectric materials, including natural and synthetic polymers, ceramics and composites, have been successfully used as bioactive scaffolds to stimulate regeneration. Nevertheless, the mechanisms by which piezoelectricity dictates cell fate remains poorly understood. This presentation will provide a systematic analysis of the response of mesenchymal stem cells (MSCs) of different origins cultured on piezoelectric poly(vinylidene fluoride) (PVDF) surfaces with varying surface potentials, and relate the cellular behaviour to differences in the protein-material interface. By exposing these differences, our research fills a critical knowledge gap and paves the way for innovations in material design for advanced tissue regeneration strategies.