Enzymatic catalysis is highly acclaimed in many areas, due to its unrivaled specificity and energy efficiency. To utilize these outstanding properties in coatings technology, we developed a novel process for material design and nano structuring on surfaces: the Enzyme Mediated Autodeposition.[1-6]

Key aspect of this universal, highly precise, sustainable, and easy-to-apply approach is an enzymatic reaction in direct proximity to the support surface. This reaction induces site-specific deposition of desired particles on the support. The size of the reaction zone is controlled by variable enzyme immobilization techniques. Consequently, the deposition patterns are fully flexible; from continuous coatings with defined film parameters to nano structuring with single particles.

According to the chosen material, either biological or biomimetic processes are utilized, resulting in universal materials compatibility of the system. At the same time, the sustainable character remains. This, in combination with the manifold types of enzymes and immobilization techniques, generates a virtually unlimited toolbox within an easily applicable and upscalable process.

Keywords: enzymes, coatings, nano structures

References:


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