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Adsorption of the low density lipoproteins on photo-sensitive polymer brushes: computer simulations

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Excessive concentration of the low density lipoproteins (LDLs) in blood increases the risk of cardiovascular diseases. One of the strategies to reduce its contents is the hemoperfusion therapy, when LDLs are selectively retracted by an external adsorber located outside the patient body. Recently, a photo-controllable smart surface was developed characterized by high selectivity and repeated cyclic usage. We examine the efficiency of such setup via computer simulation of a mesoscopic models for both LDL and the azobenzene-containing polymer brush. It is found that the adsorption efficiency is seriously affected by the brush microstructure, with the bunch-like (bush-like) arrangement of its constituent chains being the most efficient.

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