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Effect of silane molecular length on initial attachment of bacteria to silanized glass surfaces ANDREA JAIMES-LIZCANO, SUMEDHA SHARMA, JACINTA CONRAD, University of Houston — Bacteria adhered to surfaces can form biofilms, which foul biomedical implants, industrial equipment and marine vessels, leading to deleterious costs. Designing surfaces to control biofilm formation first requires understanding the role of surface chemistry on initial attachment of bacteria, the first step in biofilm formation. We characterize the initial attachment of *Escherichia coli* to glass surfaces that are coated with silane molecules with the same functional end group but two different carbon chain lengths. Bacteria are deposited from flow in a microfluidic channel at shear rates ranging from 3.1 s^{-1} to 25 s^{-1} and imaged and tracked using confocal microscopy and high-throughput image processing algorithms. The initial rate at which bacteria deposit on the surface is independent of shear rate for the shorter three-carbon chains but depends on shear rate for the longer nine-carbon chains. We found longer bacterial residence times on the shorter silane molecules at the highest shear rate.

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