Chemistry-dependent surface conditioning and its implication for settlement of spores of the green alga *Ulva*

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Changing the surface chemistry and the composition of a coating changes not only its properties, but also the formation and composition of the conditioning layer that rapidly forms on the surface. In order to correlate colonization by spores of the green alga *Ulva* with surface conditioning, we varied surface chemistry and thus wetting properties. Self-assembled monolayers (SAMs) on gold provide access to highly controlled surface chemistries and allow the physicochemical surface properties to be fine-tuned. Modification of the terminal groups of SAMs affects the initial settlement kinetics of spores of *Ulva* [1]. However, the settlement density of spores an all surfaces tended to saturate at a similar level after approximately 24 hours. As different SAMs have different affinities towards the adsorption of conditioning macromolecules, the rate of spore settlement is presumably a convolution effect of conditioning and settlement kinetics. To disentangle both effects, formation of conditioning layers on a range of surface chemistries was investigated in detail by spectral ellipsometry, XPS and IRRAS. Spore settlement was significantly changed if the conditioning films were pre-formed. Thus we have demonstrated that fouling kinetics are a delicate convolution of surface conditioning and settlement kinetics.

[1] M. E. Callow, J. A. Callow, L. K. Ista, S. E. Coleman, A. C. Nolasco, G. P. López, “Use of self-assembled monolayers of different wettabilities to study surface selection and primary adhesion processes of green algal (*Entero-morpha*) zoospores“, *Appl. Environ. Microbiol*., **2000**, *66*, (8), 3249-3254.