CHEMISTRY DEPENDING SURFACE CONDITIONING AND ITS IMPLICATION FOR COLONIZATION BY MICROORGANISMS

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The adsorption of macromolecules is among the first steps in biofouling, which starts immediately after surfaces are immersed into the ocean. The influence of surface chemistry and physicochemical coating properties on the formation and composition of conditioning layers have been investigated. In our study, self-assembled monolayers (SAMs) on gold are used as highly controlled surface chemistries which allow to fine tune the physicochemical surface properties and to study their effect on the formation of conditioning layers. In agreement with previous work, chemical termination of the surface affects the settlement kinetics of spores of the macrofouler *Ulva linza* [1]. *Ulva* settlement on the pristine surface chemistries and the successive formation of conditioning layers depending on the surface chemistry was investigated in greater detail by surface analytical techniques. Spectral ellipsometry was used to measure the increasing conditioning layer thickness over a timescale of 48 hours. Contact angle measurements revealed that formation of this protein layer changes the wettability of the surfaces and with IRRAS it was possible to show, that the surface chemistry changes the composition of the conditioning film. It also could be shown, that organism settlement is significantly changed if pristine chemistries are compared to conditioned surfaces and especially for longer biological assays conditioning needs to be taken into account.

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[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 (*Enteromorpha*) zoospores", *Appl. Environ. Microbiol.*, **2000**, *66*, (8), 3249-3254.