Microbial colonies can develop on lithic surfaces depending on various parameters (Brill, 1995), but very minor knowledge exists with microbially induced corrosion on multi-component rocks like fine-clastic claystones and shales or slates. Therefore, incubation experiments with the wood-rotting fungus Schizophyllum commune on controlled black slate surfaces shall demonstrate the influence of the microbial activity. Schizophyllum is able to excrete laccase, an unspecific oxidase that is able to degrade lignin. The structure of kerogen fractions within black slates suggests that similar components with structure comparable to lignin are present which might also be prone to degradation by laccase reactions. Furthermore the influence of unbleached and bleached (oxidized) slates to fungal activity will be investigated, because they contain different pore systems and different surface roughnesses. It seems that microbial (fungal) activity at black slate external surfaces will have destructive effect on both organic and inorganic components, partly dependant on the weathering state of the black shales.

On this account the surface area will be investigated by methods like optical microscopy, WLI (white light interferometry), AFM (atomic force microscopy), SEM (scanning electron microscopy), TEM (transmission electron microscopy), electron microprobe and XPS (x-ray photoelectron spectroscopy).

This project focuses on the change of surface morphology in weathering black slates of different oxidation states due to fungal activity.
Halde Morassina  Haldenmaterial

Black Slate
Inkubationskulturen Schizophyllum

for higher resolution look at the gallery