Project progress:

Our field trials have shown two important things. Firstly, barnacles, a dominant intertidal organism, settle, recruit, and survive in higher numbers on natural rock compared to various materials used in coastal engineering (A).

Secondly, colonisation was greater on rough materials compared to smooth; the type of texture was also important on marine concrete (B).

At a smaller scale, our microscope observations show that the nature of microbial growth also varies between materials types (images below); this influenced how the textures shown to attract barnacles developed though bioerosion and bioweathering processes.

Implications and future work:

- Early biological responses to materials used in coastal engineering did not replicate natural shores. There is, however, considerable potential to influence early colonisation by manipulating small-scale surface texture.
- Biogeomorphological processes operating at a micro-scale can generate ecologically favourable textures on certain material types, and influence their physical behaviours (e.g. hardness, warming and drying rates).
- We are applying these results in a new tidal defence scheme in the UK.