Investigating Interfacial Cross Linking to Combat Hard Foulants: An Experimental Study on Enzymatic Activities of the Balanus amphitrite

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Two novel collection methods using slab gels and glass microspheres have been successfully established to study the cementing processes via enzymatic activity occurring at the adhesion interface of the barnacle, Balanus Amphitrite. These experimental techniques effectively sampled materials in the buried cement interface where previous collection methods failed to access (having denatured the enzymes due to harsh processes). Colorimetric assays on this adhesive detected evidence that polyphenol oxidase (PPO) activities – laccase and Tyrosinase – were present and localized in the adhesion interface. Traditional native PAGE gels were also conducted on the main body organs of the barnacle and showed no presence of these PPOs. The combined results from these observations possibly provides crucial clues for understanding the adhesion mechanism of the barnacle, directing further research on the role of PPOs in barnacle cross linking.

Awards Won:
Third Award of $1,000