

## IN-SITU STUDY OF BARNACLE CYPRID AND JUVENILE BARNACLE CEMENT USING XRF MICROSCOPE AND MICRO-RAMAN SPECTROSCOPY

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Among the different biofouling species, barnacles are one specific threat as they are difficult to remove, able to damage foul release coatings and increase the drag force of ships.<sup>[1,2]</sup> Furthermore, barnacles are a good model system for research on permanent underwater adhesion strategies <sup>[2]</sup>. This study aims on the understanding and comparison of the spatial organization and the chemistry of the adhesive secreted by different cyprid larvae and juvenile barnacles for settlement. We apply both, synchrotron based X-ray microprobe fluorescence and Raman spectroscopy, for the in-situ investigation of the chemistry of barnacle cement. The results of these studies will provide information on chemical composition and morphological structure of both barnacle species at different life stages. The derived mechanistic understanding of the adhesive is supposed to lead to new, environmentally benign antifouling solutions aiming on the interference with curing of the adhesive and thus the attachment process.

1. J.A. Callow, M.E. Callow "Trends in the development of environmentally friendly fouling-resistant marine coatings" *Nature Commun.* (2011), 2, 244.
2. Aldred, N. and A. S. Clare "The adhesive strategies of cyprids and development of barnacle-resistant marine coatings." *Biofouling*, (2008), 24(5): 351-363.