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Development of eco-friendly hybrid antifouling coatings

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Antifouling paints are the main system used against the development of organisms on immerged surface and the most studied. Lots of researches have been done to increase efficiency against the biofouling. However, these improvements have been done to the detriment of the environment. Nowadays two strategies are used the biocide release system based on the incorporation of natural or synthetic biocides less harmful for the environment and the fouling release strategy based on paints with physico-chemical surface properties to limit durable colonization by organisms. Both kinds of paints have shown their limits, use of large amount of heavy metals for biocides systems and inefficiency in statics conditions for fouling release coatings. In this aim, antifouling paints with a hybrid binder combining the two strategies have been developed. Polylactic acid is well known for its degradation in seawater and poly dimethylsiloxane for its surface properties. Both polymers are non-toxic and already used in antifouling. The objectives of this study are to measure the efficiency of polylactic acid-poly dimethylsiloxane system for antifouling paints and to observe the influence of the physico-chemical properties of the binder like the molecular weight on the antifouling activity. The use of a block copolymer should allow mixing the properties of erosion and hydrophobicity to obtain a more efficient paint with a reduced environmental impact. Antifouling activities have been evaluated by immersion in seawater in Lorient harbor. The hybrid paints have shown efficiency superior to a commercial paint during their immersion *in situ* despite inadequate static conditions of test and with a lower biocide amount.

Biography

Isabelle Linossier has completed his PhD from Lyon University and Postdoctoral studies from Lorient University. She is a Professor and Co-Director of Laboratory of Chemistry and Biotechnology Marine at the Lorient University. She works on eco-friendly development of antibiofilm and antifouling surfaces. She has published more than 45 papers in reputed journals.

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