

Biomimicry in antifouling solutions*Corentin Gachet, Axel Houillier, Louis Le Moulec**Antwerp Maritime Academy**Noordkasteel Oost 6**2030 Antwerp, Belgium*Corresponding author E-mail: louisantoinelemoulec@gmail.com

Shipping industry is facing an ever-increasing pressure caused by the environmental impact of its activities. In many industrial fields, ranging from medical technologies to aeronautics, nature itself offers valid, ecologically sound alternative solutions to complicated problems. By means of this poster we look at biomimetic antifouling solutions for the ship's hull.

What is biomimicry? It is the study of the structure and function of biological systems and processes as models or inspiration for the sustainable design and engineering of materials and machines.

Inspired by nature, multiple studies and experiments tried to unveil how marine organisms cope with fouling. Different strategies could be identified. Next, some of these techniques were developed further into useful artificial antifouling solutions. Some of this research was even commercialized. Here, we wish to provide an overview of biomimetic maritime antifouling solutions. Good examples comprise:

- The Thorn-D self-adhesive foil (Micanti), which consist of a chaotic mass of nylon fibers, comparable to a thorny bush. Commercialised since 2012, it is said to improve fuel costs by 20%.
- Sharklet AF mimicks the denticles in the shark skin, increasing fluid flow at the hull surface, leading to a reduction in microorganism settlement.
- A similar way of thinking led to Shell's microtopographic surfaces (Dublin University), made in poly(methyl methacrylate), and inspired by observations of a crab shell immersed in a diatom culture