Smart materials for the coral reefs of tomorrow

Simone MONTANO - *University of Milano Bicocca*

Coral reefs are vital for the marine realm and their potential disappearance can have unequivocal consequences on our environment. Unfortunately, severe natural and anthropogenic changes such as ocean warming, acidification, coral diseases, and plastic pollution are extremely detrimental to this ecosystem. To date very few mitigation techniques have been proposed to reduce the impact of these threats, and even less are the ideas to boost their recovery. Here, we report two case studies in which the use of new materials may be considered a new and promising tool for saving this ecosystem. Firstly, we demonstrate that recently developed bi-layer human skin wound treatment patches containing antiseptics and natural antioxidants with controlled-release capacity can be adapted to treat Scleractinia coral wounds effectively. Secondly, the potential of two bio composites (based on biodegradable polyurethane and silicone matrices) to boost coral growth or other marine organisms has been evaluated. All works are the result of a collaboration between the Marine Research and High Education centre (MaRHE), a marine field station of the University of Milano Bicocca located in Maldives, and the Italian Institute of Technology (IIT) of Genova with the common aim to revolutionize/improve the coral reefs conservation strategies through innovative approaches.