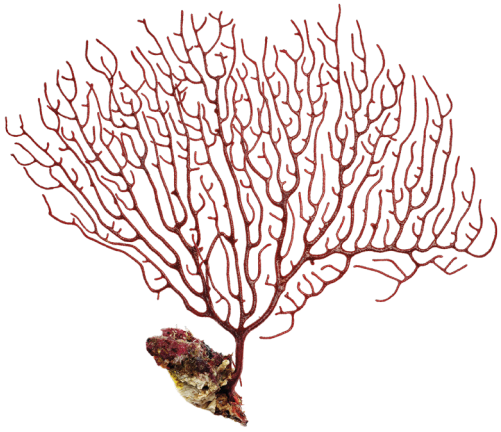
Surface Films: a feasibility study

One of the seven Natural Wonders of the World, the Great Barrier Reef is a significant part of Australia's natural heritage and economy.



Great Barrier Reef Foundation

Coral reefs are vulnerable to bleaching

Most corals are dependent on single-celled algae, called Zooxanthallae, that live inside coral tissues, provide them with food and give them their vibrant colour.

Under stress, zooxanthellae are expelled from the coral tissue, leaving the corals white—a process scientists call 'coral bleaching'. Typically coral bleaching follows periods of elevated water temperatures and/or excessive light exposure.

Corals can, and will, recover from bleaching and their zooxanthellae will return, if the stressful conditions are not long-lasting.

Bleaching risk greatest in hot and still conditions

Bleaching risk is greatest during hot and still conditions, due to the combined stress from warmer waters and intense light.

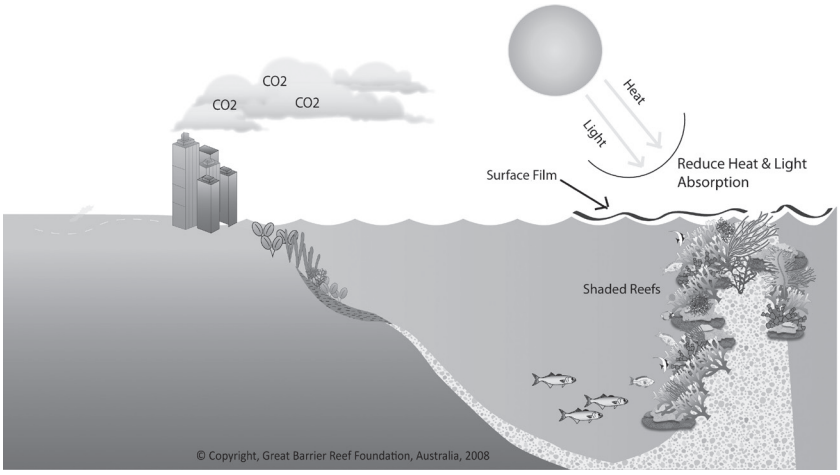
Global climate change threatens to increase the frequency and longevity of such bleaching-causing conditions.

Seeking innovative solutions to combat coral bleaching events across the Great Barrier Reef, the Foundation is supporting exploratory laboratory-based research into novel surface film technology.

How does surface film technology work?

Surface films are comprised of naturally-occurring molecules that form very thin layers, one molecule thick. Scientists have observed that when applied to the surface of water, these surface films can be used to help regulate environmental conditions. For example, they can control evaporation from water storage reservoirs during periods of intense drought.

The Foundation's surface films project is a laboratory-based study that builds on this existing knowledge. As part of the activities of the Cooperative Research Centre for Polymers, scientists from the University of Melbourne have developed a surface film system with polymers which enhances



the film properties. The same scientists will examine the feasibility of applying this novel technology to regulate the amount of light, and thus heat, entering a body of water.

Why a solutions-focused approach?

The best way to protect the Great Barrier Reef from climate change is to reduce the world's carbon emissions. However, even if world leaders reached agreement on a global mitigation strategy tomorrow, the impacts of climate change, such as increasing water temperature, will be experienced on the Great Barrier Reef now and for some time into the future. Because of this, the Great Barrier Reef Foundation supports research into the development of novel small-scale options for helping coral reefs cope with the impacts of climate change, to sit alongside global strategies to reduce carbon emissions.

The aim of this solutions-focused approach is to provide Reef managers and policy makers with proven concepts which they can choose to adopt and implement to conserve biodiversity on the Great Barrier Reef, if, and when required.

If proven, surface film technology could help reduce the effects of intense light and warming ocean temperatures, reducing the impact of coral bleaching caused by climate change at small scales.

The project *Surface Films to Attenuate Light into the Great Barrier Reef* is a collaboration between

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Solutions for a better world

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