Biological oil dispersants form films that capture and stabilize oil droplets in aqueous solutions

Technology #m11-044

Network proteins are substances that are naturally produced by bacteria and disperse oils in aqueous solutions by forming films that capture and stabilize oil droplets. These strong and flexible films consist of three-dimensional networks that spontaneously form and disperse oil upon addition to solutions of oil and water. This technology can be used to reduce the environmental impact of oil slicks and spills by helping to disperse oil, which reduces its environmental impacts and speeds its degradation by oil consuming bacteria. As an alternative to toxic chemical dispersants, this technology lessens environmental damage caused by oil spills and their associated clean-up efforts.

Strong and flexible films disperse oil in an environmentally friendly manner

Biological oil dispersants create strong and flexible films, capable of encapsulating and dispersing many types of oils, even those with high viscosities. The network proteins that disperse oil are naturally produced by bacteria and can be used both with and without purification. As a result, this technology offers a method to disperse oil using naturally produced biological reagents that are non toxic, compatible with biological systems, and have fewer negative impacts on the environment.

This technology has been demonstrated to effectively disperse n-hexadecane and hexanes in water, forming stabilized oil droplets ranging from 50 nm to 2 mm in size.

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Applications:

- Disperse oil for waste water treatments.
- Disperse oil to clean up spills and slicks in natural bodies of water.
- Form stable colloids of oils and water for transportation or storage.

Advantages:

- Disperse oil without toxic chemicals, posing fewer dangers to the environment.
- Disperse oil with network proteins produced directly by bacteria with or without purification.
- Prevent the release of volatile compounds in oils, reducing environmental contamination and pollution.

Patent information:

Patent Pending (WO/2012/078675)

Licensing Status:

Available for licensing and sponsored research support

Tech Ventures Reference: IR M11-044

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